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WORK PLAN ADDENDUM NUMBER 6 FOR INTERIM REMOVAL ACTIONS AT SITE 8
OPERABLE UNIT 13 NAS PENSACOLA FL
5/6/2004
CH2MHILL



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May 6, 2004

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Subject: Contract No. N62467-98-D-0095
Contract Task Order No. 0085
Naval Air Station (NAS) Pensacola – Pensacola, Florida
Work Plan Addendum No. 06 for the Interim Removal Actions at Operable Unit 13 -
Site 8, Revision 00

Dear Mr. Hill:

CH2M HILL is pleased to provide one hard copy and one electronic copy of the above-referenced work plan. This work plan presents the soil excavation procedures for the removal of cadmium and dieldrin-contaminated soil at Site 8. Copies have also been sent to USEPA, FDEP, and the rest of the NAS Pensacola Partnering Team.

Please contact me (850.939.8300, ext. 17) if you have any questions or comments regarding this material.

Sincerely,

CH2M HILL

A handwritten signature in black ink, appearing to read "Amy Twitty".

Amy Twitty, P.G.
Project Manager

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Greg Campbell/NASP
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Brian Caldwell/EnSafe
CCI Project File No. 271578

**Work Plan Addendum No. 06
Interim Removal Actions at
Operable Unit 13 - Site 8
Naval Air Station Pensacola
Pensacola, Florida**

Revision No. 00

Contract No. N62467-98-D-0995

Contract Task Order No. 0085

Submitted to:

**U.S. Naval Facilities
Engineering Command
Southern Division**

Prepared by:



115 Perimeter Center Place, N.E.
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May 2004

Work Plan Addendum 06 Interim Removal Actions at Operable Unit 13 - Site 8

Naval Air Station Pensacola Pensacola, Florida

Revision No. 00

Contract No. N62467-98-D-0995
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Submitted to:

U.S. Naval Facilities
Engineering Command
Southern Division

Prepared by:



May2004

Prepared/Approved By:

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Amy Twitty, Project Manager

May 6, 2004

Date

Approved By:

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Scott Smith, Deputy Program Manager

May 6, 2004

Date

Client Acceptance:

U.S. Navy Responsible Authority

Date

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Acronym List

µg/L	micrograms per liter
AALA	American Association for Laboratory Accreditation
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AFCEE	Air Force Center for Environmental Excellence
AHA	Activity Hazard Analysis
ARARs	applicable and relevant and appropriate requirements
bls	below land surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	Contracting Officer
COC	contaminant of concern
CompQAP	Comprehensive Quality Assurance Plan
COPC	contaminant of potential concern
CTO	Contract Task Order
EISOPQAM	Environmental Investigation Standard Operating Procedures and Quality Assurance Manual
EPA	U.S. Environmental Protection Agency
EPP	Environmental Protection Plan
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FS	Feasibility Study
ft	feet or foot
HSP	Health and Safety Plan
IC CDQM	Navy Installation Restoration Chemical Data Quality Manual
IRA	Interim Remedial Action
IRP	Installation Restoration Program
LDR	Land Disposal Restriction
LUC	Land Use Control
mg/kg	milligrams per kilogram
ml	milliliter
MS/MSD	matrix spike/matrix spike duplicate
msl	Mean sea level
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NEESA	Naval Energy and Environmental Support Activity
NELAC	National Environmental Laboratory Accreditation Center
NIST	National Institute of Standards and Technology
NTR	Navy Technical Representative
NVLAP	National Voluntary Laboratory Accreditation Program

OU	Operable Unit
PPE	personal protective equipment
PWC	Public Works Center
QA	quality assurance
QC	quality control
QCR	Quality Control Report
RCRA	Resource Conservation and Recovery Act
RG	Remedial Goal
RI	Remedial Investigation
ROD	Record of Decision
ROICC	Resident Officer in Charge of Construction
SAP	Sampling and Analysis Plan
SCTL	soil cleanup target level
SHSS	Site Health and Safety Specialist
SOPQAM	Standard Operating Procedures and Quality Assurance Manual
SPLP	synthetic precipitation leaching procedure
SVOC	semivolatile organic compound
TAL	target analyte list
TAT	turnaround time
TCL	target compound list
TCLP	toxicity characteristic leaching procedure
TSD	treatment, storage, or disposal
TtNUS	Tetra Tech NUS
UCL	upper confidence level
USACE	U.S. Army Corps of Engineers

1.0 Introduction

CH2M HILL, Inc. (CH2M HILL) has been contracted by the Department of the Navy, Southern Division, Naval Facilities Engineering Command (NAVFAC EFD SOUTH), to prepare this Interim Remedial Action Work Plan for work to be performed by CH2M HILL at Naval Air Station (NAS) Pensacola in Pensacola, Florida. The work is being performed under Contract No. N62467-98-D-0995, Contract Task Order (CTO) No. 0085, and in accordance with the management approach outlined in the CH2M HILL Contract Management Plan dated July 1998.

NAS Pensacola is located in Escambia County, approximately 5 miles west of the Pensacola city limits. The approximately 5,000-acre installation was constructed in the 1800s. Prior to construction, the facility was undeveloped and sparsely vegetated. Land use at NAS Pensacola consists of various military housing, training, and support facilities as well as large industrial complexes for major repairs and refurbishment of aircraft engines and frames. Site 8 is located along the eastern side of John Tower Road, south of Taylor Road, in the middle of the NAS complex (Figure 1-1) and is included in Operable Unit (OU) 13.

1.1 Site Location and History

Site 8 site is an approximate 450- by 600-foot area currently occupied by Building 3561, which houses the NAS Pensacola Public Works Center (PWC) Maintenance/Material Department (Figure 1-2). An extensive asphalt-paved area surrounds Building 3561 to the north, east, and west, covering nearly all land surface. An approximate 20-foot wide concrete apron, covered by an awning, immediately surrounds the building to the east and west. The PWC stores building materials on the paved area west of the building. Site 8 is generally flat with a land surface elevation averaging 29 feet (ft) above mean sea level (msl). Miscellaneous office trailers and fences storage, including Building 3678, are north of Building 3561 (EnSafe, Inc. [EnSafe], 2000). The paved area east of the building is used for PWC storage and employee parking. Sidewalks and a grassy median are to the south, between Buildings 3560 and 3561. Most of the site is surrounded by a chain-link fence.

Site 8 is the former base rifle range and disposal area. Various solid wastes and dry refuse were reportedly placed in trenches and burned there in the late 1950s and early 1960s (EnSafe, 2000). Aerial photographs and maps from the 1950s and 1960s show a rifle range at the current location of Building 3561. Earlier aerial photographs show an excavation at the northern end of the rifle range, while later photographs show the excavated area overgrown with vegetation (EnSafe, 2000). Most of the excavation noted in the earlier photographs is currently covered by Building 3561 and the surrounding paved area, which were constructed in the mid 1970s. Facility personnel reported no waste or residue were identified during construction of the building (Naval Energy and Environmental Support Activity [NEESA], 1983). Recent interviews with PWC personnel indicate there may be a great deal of trash and debris in the subsurface and possibly some drums in the area west of Building 3561.




FIGURE 1-1
 Site 8 Location Map
 OU13, NAS Pensacola
CH2MHILL

LEGEND

Building 

Fence 

Monitoring Well 

Soil Sample (1996) 

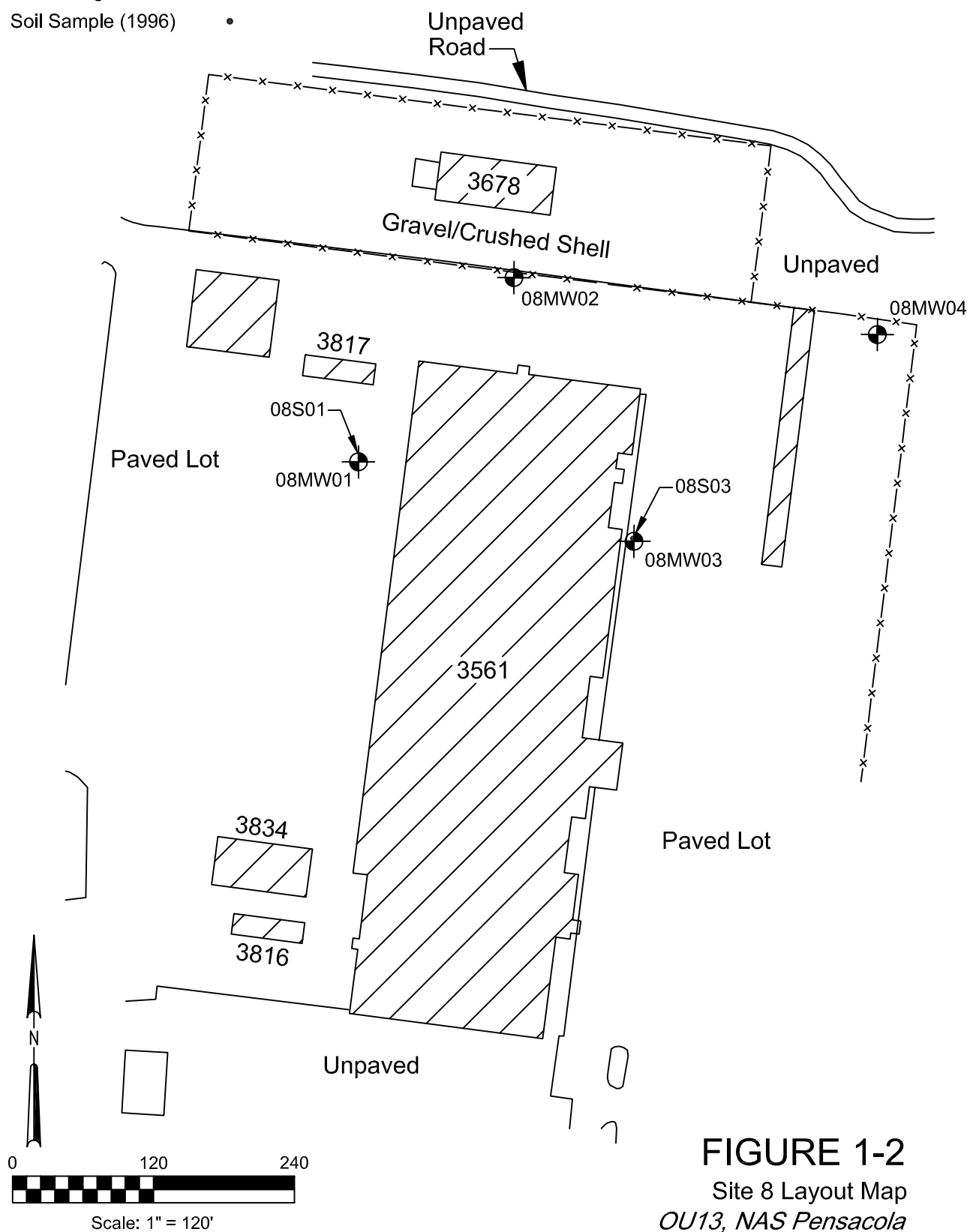


FIGURE 1-2
Site 8 Layout Map
OU13, NAS Pensacola

1.2 Previous Investigations

Remediation activities at OU 13 are regulated under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). NEESA completed an Initial Assessment Study in 1983, followed by a Phase I screening investigation in 1991. A Remedial Investigation/Feasibility Study (RI/FS) has also been completed for OU 13. EnSafe submitted a draft Proposed Plan and Record of Decision (ROD), which proposed the removal of soil to industrial criteria with Land Use Controls (LUCs). However, in an effort to remove the land use restrictions on soil at the site and achieve residential soil cleanup goals, EnSafe performed a statistical evaluation of the data using Florida Department of Environmental Protection (FDEP's) paper *Use of the 95 Percent Upper Confidence Level (UCL) in Developing Exposure Point Concentrations of Contaminants in Soil* (May 11, 1999). Based on their statistical analysis using the 95 percent UCL, the new interim action would remove "hot spots" to residential criteria and no LUCs would be required for soil. An Interim Remedial Action (IRA) was recommended at OU 13 to remove soil to residential criteria to minimize human health and ecological risk.


In 2002 through 2003, CH2M HILL conducted IRA activities at OU 13. The objective of the IRA was to excavate and properly dispose of contaminated soil. Before excavation activities, soil and groundwater samples were collected to delineate or confirm the presence of cadmium and dieldrin at Site 8. In addition, CH2M HILL installed groundwater monitoring wells and collected groundwater samples to evaluate whether the constituents detected in soil affected groundwater.

On August 13 and 14, 2002, CH2M HILL collected soil samples at Site 8 near former RI sample 08S01 for the source delineation of cadmium. Subsurface soil samples were collected from 5 to 7 ft bls and 10 to 12 ft bls. Of the eight initial subsurface samples collected and analyzed for cadmium, no samples exceeded the residential direct exposure remedial goal (RG) of 75 milligrams per kilogram (mg/kg) or the leachability RG of 8 mg/kg. Cadmium soil boring locations are shown on Figure 1-3. Figure 1-4 presents the cadmium results in the vicinity of sample 08S01.

Additionally, soil samples were collected near former RI sample 08S03 for the source delineation of dieldrin. Surface and subsurface soil samples were collected in intervals from 0 to 1 ft bls, 5 to 7 ft bls, and 10 to 12 ft bls. Of the three initial surface and six subsurface soil samples collected and analyzed for dieldrin, no samples exceeded their respective residential direct exposure RG of 0.21 mg/kg or leachability RG of 0.004 mg/kg. Dieldrin soil boring locations are shown on Figure 1-5. Figure 1-6 presents the dieldrin soil sample results.

CH2M HILL submitted two technical memoranda, *Evaluation of Site Conditions based on Results of Soil and Groundwater Sampling, Operable Unit 13 – Site 8, Revision 01* (CH2M HILL, 2002a) and *Evaluation of Site Conditions based on Results of Soil and Groundwater Sampling, Operable Unit 13 – Site 24, Revision 01* (CH2M HILL, 2002b) in October 2002. These memoranda provided details of the soil and groundwater sampling and subsequent results. After a review of these memoranda, the U.S. Environmental Protection Agency (EPA) and FDEP recommended further soil sampling using the synthetic precipitation leaching

LEGEND

Building	
Soil Sample (1996)	•
Soil Sample (August 2002)	▲
Soil Sample (June/August 2003)	▼

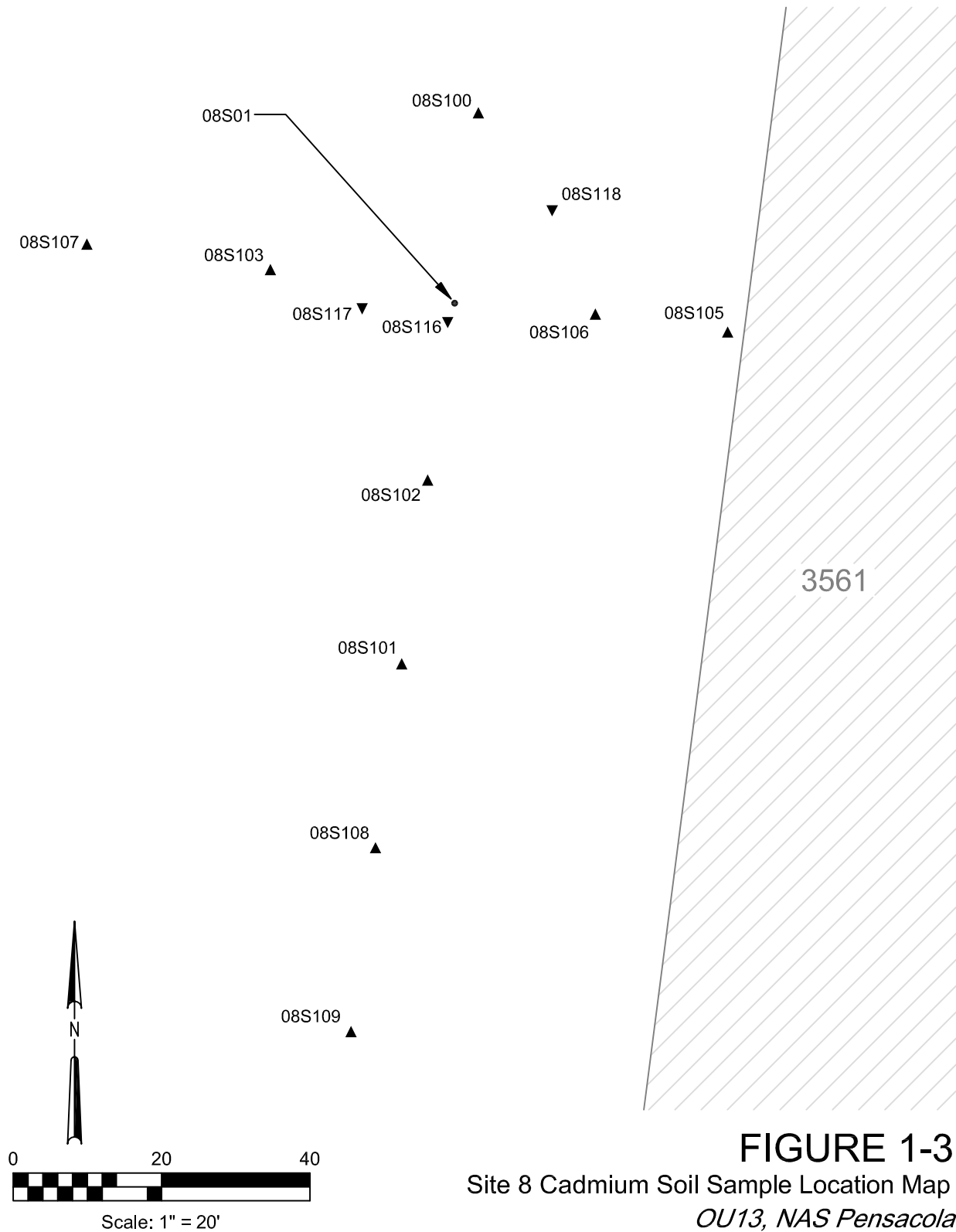


FIGURE 1-3

Site 8 Cadmium Soil Sample Location Map
OU13, NAS Pensacola

	62-777, F.A.C. Leachability Based On Groundwater (mg/kg)	62-777, F.A.C. Industrial Direct Exposure (mg/kg)	62-777, F.A.C. Residential Direct Exposure (mg/kg)	Groundwater Cleanup Target Level (µg/L)
Cadmium	8	1,300	75	5

Soil analytical results are shown in mg/kg.

SPLP results are shown in µg/L.

* Indicates an exceedance of one or more cleanup criteria.

LEGEND

Building



Soil Sample (1996)



Soil Sample (August 2002)



Soil Sample (June/August 2003)



Monitoring Well

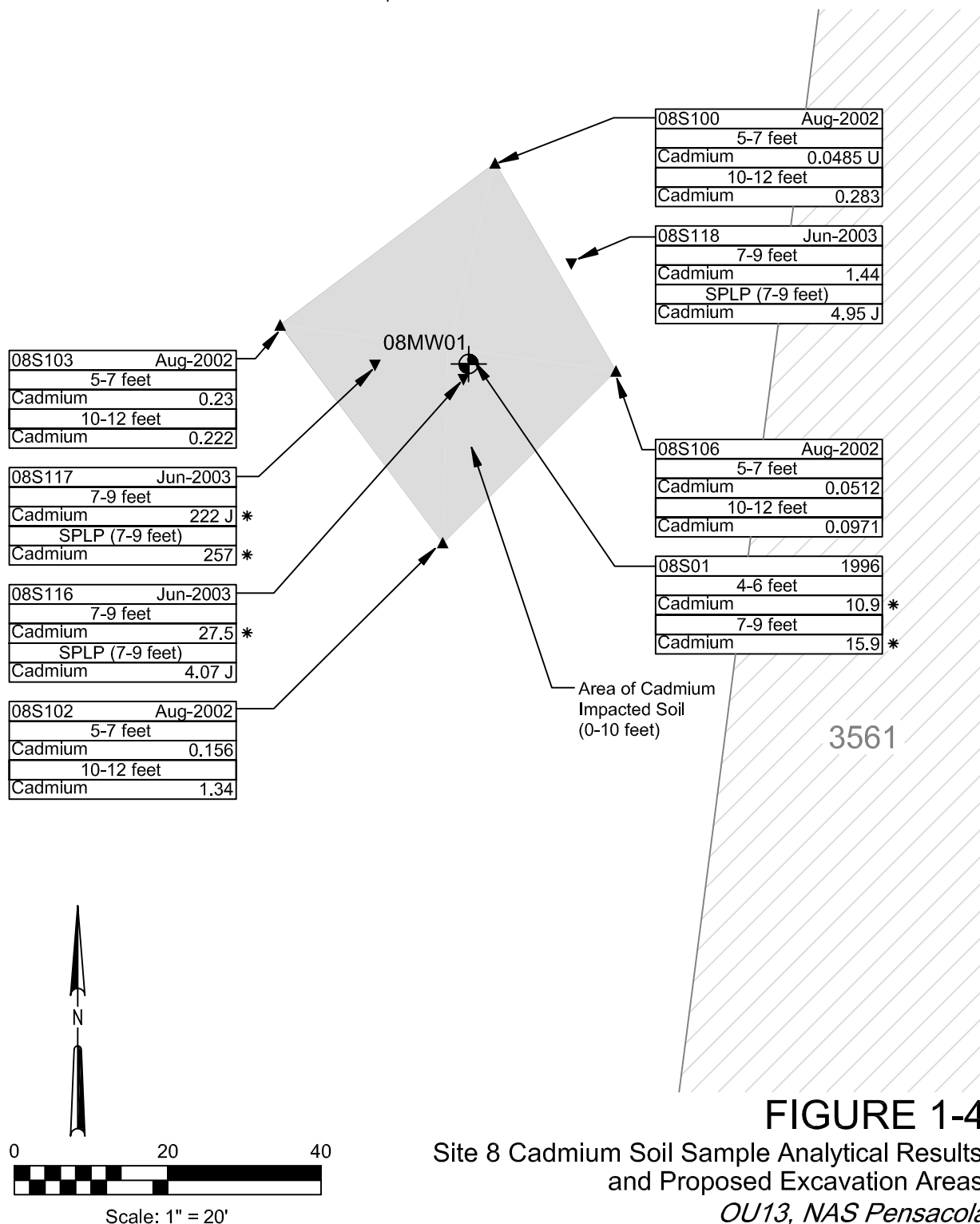


Estimated Value

J

Undetected Value

U





62-777, F.A.C. Leachability Based On Groundwater (mg/kg)	62-777, F.A.C. Industrial Direct Exposure (mg/kg)	62-777, F.A.C. 3X Residential Direct Exposure (mg/kg)	Groundwater Cleanup Target Level (µg/L)
Dieldrin 0.004	0.3	0.21	0.005

Soil analytical results are shown in mg/kg.

SPLP results are shown in µg/L.

* Indicates an exceedance of one or more cleanup criteria.

LEGEND

Building

Soil Sample (1996)

Soil Sample (August 2002)

Soil Sample (June/August 2003)

Soil Sample (April 2004)

Monitoring Well

Estimated Value

Undetected Value

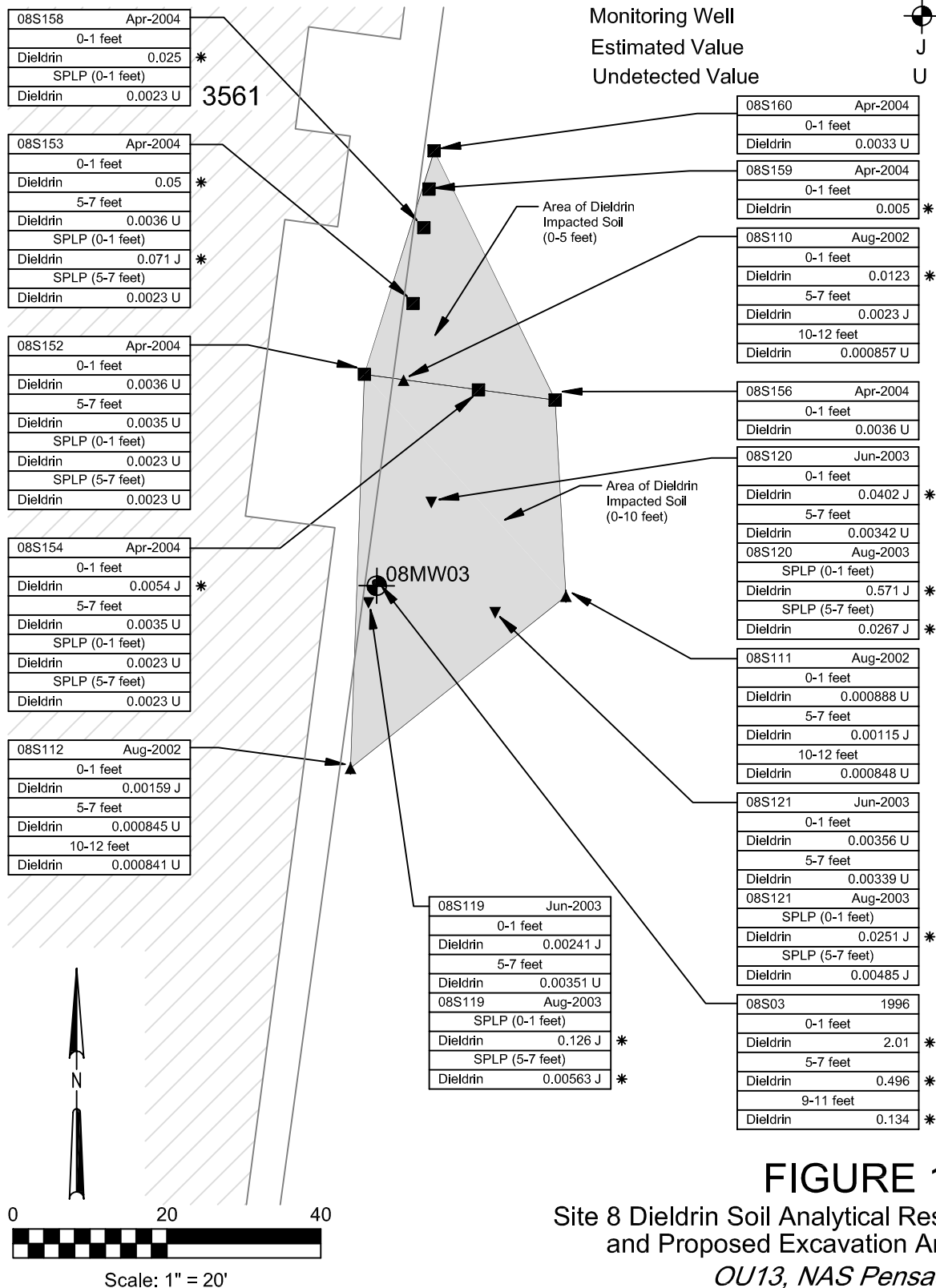


FIGURE 1-6
Site 8 Dieldrin Soil Analytical Results
and Proposed Excavation Areas
OU13, NAS Pensacola

procedure (SPLP) method in the hot spot areas to evaluate whether the contaminants in the soil have the potential to leach into groundwater. In addition, it was recommended that permanent groundwater monitoring wells be installed and sampled to verify groundwater contamination in the hot spot areas.

From June through August 2003, three soil borings were advanced from 5 to 7 ft bls and 7 to 9 ft bls near RI sample 08S01 and analyzed for cadmium at Site 8. Cadmium concentrations ranged from 1.44 to 222 J mg/kg, exceeding the residential direct exposure RG of 75 mg/kg in one sample and the leachability RG of 8 mg/kg in two samples. In addition, one of four samples collected from 7 to 9 ft bls and analyzed for cadmium using SPLP methodology exceeded the GCTL of 5 µg/L, with a concentration of 257 µg/L. Refer to Figure 1-4 for cadmium soil sample results.

Additionally, in an effort to evaluate the leachable properties of the dieldrin contamination in the vicinity of RI sample 08S03, three surface (0 to 1 ft bls) and three subsurface (5 to 7 ft bls) soil samples were collected and analyzed for dieldrin. Only one of the three surface samples collected (with a concentration of 0.0402 J mg/kg) and analyzed for dieldrin exceeded the leachability RGs of 0.004 mg/kg. None of the surface soil samples exceeded the residential direct exposure RG of 0.21 mg/kg; none of the three subsurface soil samples analyzed for dieldrin exceeded the residential or leachability RGs. Additionally, all four surface samples (with concentrations ranging from 0.0251 J to 0.571 J µg/L) and two of the three subsurface soils (with concentrations of 0.00563 J and 0.0267 J µg/L) collected and analyzed for dieldrin using SPLP methodology exceeded the GCTL of 0.005 µg/L. Refer to Figure 1-6 for dieldrin soil sample results.

Based on the analytical data, the conclusions for Site 8 are as follows:

- Cadmium in soil exceeds both the residential direct exposure and leachability RGs. In addition, cadmium exceeds the GCTL when analyzed using SPLP methodology. Cadmium was also found in one monitoring well above the GCTL.
- Dieldrin in soil exceeds the leachability RG and the GCTL when analyzed using SPLP methodology. Dieldrin was not detected in the groundwater monitoring wells at the site.

1.3 Recommended Removal Action

Since there was no impact of cadmium and dieldrin to groundwater at the site in the areas of soil contamination, and the contaminated areas were covered with asphalt and/or concrete, CH2M HILL recommended that the contaminated soil at Site 8 be left in place. Under this scenario, however, LUCs would be required to maintain the protective cap and, due to the cadmium residential exceedence, the LUCs would restrict the future land use to industrial. During the February 23 to 24, 2003, partnering meeting, the Navy determined the cost to maintain LUCs over a 30-year period would likely exceed the costs to excavate the soil. Since soil excavation also would be more protective, the team agreed.

Soil delineation at the site has been achieved for cadmium west of Building 3561. An estimated area measuring 1,075 square ft by 10 ft deep from the location of former sample 08S01 is proposed for excavation of cadmium-impacted soil. The proposed volume of soil removal in this area is approximately 398 cubic yards (yd³). Figure 1-4 shows the proposed excavation area for cadmium.

In the dieldrin-impacted area east of Building 3561, dieldrin was previously delineated to the residential soil RG, but not was delineated to the leachability RG. Therefore, CH2M HILL remobilized in April 2004 to collect additional samples to the north, east, and west of sample 08S110. Delineation was accomplished by collecting a total of 17 samples from nine borings in the vicinity of former sample 08S110 (Figure 1-5). Select samples were held at the laboratory pending the results of those samples closest to the contamination. Seven surface soil samples (0 to 1 ft bls) and three subsurface samples (5 to 7 ft bls) were analyzed for total dieldrin using EPA Method 8081A on a 48-hour turnaround time. Additionally, seven samples were also analyzed for dieldrin using SPLP methodology. All samples were delivered to Mitkem Corporation located in Warwick, Rhode Island (a Navy-approved laboratory).

Samples collected 10, 20, and 25 ft north of sample 08S110 either exceeded the leachability RG (0.005 mg/kg) or failed SPLP (SPLP result greater than the groundwater RG of 0.004 µg/L). One sample east of 08S110 also failed the leachability criteria from 0 to 1 ft bls. Table 1-1 presents the results of the April 2004 soil sampling event. Validated laboratory results are included in Appendix A.

TABLE 1-1
Soil Analytical Results – April 2004
OU 13, NAS Pensacola

Boring	Location	Depth (ft bls)	Total Dieldrin mg/kg	SPLP Dieldrin µg/L
08S152	5 ft W of 08S110	0-1	0.0036 U	<0.0023
		5-7	0.0035 U	<0.0023
08S161	10 ft W of 08S110	0-1	NA	NA
		5-7	NA	NA
08S153	10 ft N of 08S110	0-1	0.050	0.071 J
		5-7	0.0036 U	<0.0023
08S158	20 ft N of 08S110	0-1	0.025	<0.0023
		5-7	NA	NA
08S159	25 ft N of 08S110	0-1	0.005	N/A
		5-7	NA	NA
08S160	30 ft N of 08S110	0-1	0.0033 U	N/A
		5-7	NA	NA
08S154	10 ft E of 08S110	0-1	0.0054 J	<0.0023
		5-7	0.0035 U	<0.0023
08S156	20 ft E of 08S110	0-1	0.0036 U	NA
		5-7	NA	NA
08S157	30 ft E of 08S110	0-1	NA	NA
Remedial Goal			0.004	0.005

Bold indicates exceedence of remedial goal
µg/L = micrograms per liter
bls = below land surface
U = undetected

mg/kg = milligrams per kilogram
ft = feet
NA = not analyzed
J = estimated value

Following analysis, dieldrin was delineated to the north to sample 08S160 (30 ft north of sample 08S110), to the east to samples 08S156 (20 ft east of sample 08S110) and 08S111 (from the August 2002 sampling event), and to the west to sample 08S152 (5 ft west of sample 08S110). A triangular area measuring approximately 376 square ft (ft²) by 5 ft deep north of sample 08S110 is proposed for excavation of dieldrin-impacted soil. In addition, an area measuring approximately 1,011 ft² by 10 ft deep south of sample 08S110 is proposed for excavation of dieldrin-impacted soil. The proposed volume of dieldrin-impacted soil is approximately 444 yd³. Figure 1-6 shows the proposed excavation area for dieldrin.

In order to achieve No Further Action without LUCs at the site and to protect human health and the environment, the soil at former samples 08S01 and 08S03 will be excavated and transported off-site. Table 1-2 presents the proposed excavation volumes for Site 8, while Figures 1-4 and 1-6 present the proposed excavation areas for cadmium and dieldrin impacted soils, respectively.

TABLE 1-2
Proposed Excavation Volumes
OU 13, NAS Pensacola

Excavation Area	Surface Area (square feet)	Depth (feet)	Volume (cubic yards)
08S01	1,075	0-10	398
08S03	376	0-5	70
	1,011	0-10	374
Total	2,462		842

1.4 Plan Organization

This Work Plan is organized into seven sections and four appendices as follows:

Section 1.0 Introduction describes the organization of this plan and the objective of planned remedial activities.

Section 2.0 Execution Plan describes the tasks to be performed under this CTO, the project schedule, and the communications plan.

Section 3.0 Sampling and Analysis Plan outlines the required testing of environmental media, including construction materials, under this CTO. Specific procedures are included in the Basewide Work Plan.

Section 4.0 Environmental Protection Plan addresses measures to be implemented to protect the environment.

Section 5.0 Waste Management Plan addresses the management and disposal or recycling of wastes generated during the execution of this CTO.

Section 6.0 Quality Control Plan includes the submittal register and the site-specific project organization chart. The submittal register presents the project-related submittals and their projected submittal dates.

Section 7.0 References lists the documents referenced in preparing this Work Plan Addendum.

The following support documents are presented as appendices to this Work Plan Addendum:

- Appendix A** April 2004 Analytical Results
- Appendix B** Health and Safety Plan
- Appendix C** Project Schedule
- Appendix D** Submittal Register
- Appendix E** Quality Control Manager Appointment Letter
- Appendix F** Testing Plan and Log

1.5 Interim Remedial Action and Objective

The objective of the interim remedial activities being performed by CH2M HILL under this CTO includes performance of soil excavations of dieldrin and cadmium in surface and subsurface soil at Site 8. After attainment of soil remediation cleanup goals, the site will be restored to meet surrounding conditions and specifications.

2.0 Execution Plan

This section includes a description of the remedial tasks, along with the project schedule and communications plan.

2.1 Scope of Work Tasks

The components of the work to be performed under this CTO for NAS Pensacola include the following:

- Mobilization and setup
- Site utilities clearance
- Pre-excavation soil confirmation and disposal profile sampling
- Pre-excavation survey of contaminated areas
- Excavation shoring
- Excavation of contaminated soil
- Post excavation survey
- Site restoration
- Waste management and disposal
- Decontamination and demobilization

2.1.1 Mobilization and Site Setup

This task includes mobilizing personnel, equipment, subcontractors, and materials to NAS Pensacola and establishing temporary facilities to conduct the remedial activities. CH2M HILL will review all Navy rules, regulations, and standard operating procedures regarding vehicle movement and control inside the facility. All location provisions will be observed including notifications and communication requirements. CH2M HILL will minimize disturbance to any operations during project activities. CH2M HILL will consult with onsite Navy personnel to evaluate area access, placement of equipment, and traffic flow to minimize the impact of this work to facility operations.

Prior to the commencement of activities and as needed, construction fence, signs, and barricades will be placed to prohibit access to the work area.

A laydown/decontamination area will be mutually agreed upon by NAS Pensacola and CH2M HILL personnel.

2.1.2 Site Utilities Clearance

A thorough utility survey will be conducted and coordinated through Mr. Greg Campbell, Installation Restoration Program (IRP) Manager, NAS Pensacola. The survey will include the location of all underground utilities (e.g., fiber optics cable, electric wires, telephone and/or communications leads, sanitary and storm sewer piping, water lines, natural gas pipelines). Any underground utilities identified in the excavation areas will be clearly delineated and reported through Mr. Campbell.

2.1.3 Waste Disposal Sampling

In an effort to pre-characterize the soil to be excavated during the IRA, CH2M HILL collected individual waste profile samples from the center of each excavation area in April 2004. Analytical results indicate the soil to be removed is non-hazardous. Laboratory results for the waste disposal sampling are included in Appendix A. However, additional waste profile samples will be collected during excavation activities. Refer to Section 3.0 for waste sampling procedures.

2.1.4 Pre-Excavation Survey

A Florida-Licensed Professional Land Surveyor will be contracted to locate each excavation area by its state plain coordinates. This survey will include the exact location of the sample points where the delineation samples were collected and an accurate topographic delineation of the area to be excavated. The topographic delineation will be critical in restoring the excavation areas to the original grades and elevations.

2.1.5 Monitoring Well Abandonment

Currently, there are two shallow groundwater monitoring wells located within the excavation areas (Figure 1-2). Well 08-MW-01 is located on the west side of Building 3561 in the center of the cadmium-impacted soil. Well 08-MW-03, located east of Building 3561, is within the dieldrin-impacted soil area. Each well is approximately 18 ft deep and is screened from 8 to 18 ft bls.

Prior to excavation activities, abandonment permits will be obtained from the Northwest Florida Water Management District. Additionally, a request for variance will be submitted to the District to abandon the wells while excavating rather than abandoning them in place with grout prior to excavation. In order to receive a variance, the wells must be completely removed during excavation. In the event any portion of the wells cannot be fully removed, the remaining portion must be properly abandoned by a licensed well contractor.

2.1.6 Excavation Shoring

A shoring system consisting of steel soldier piles and vertical steel sheet piles will be installed on the east side of Building 3561 (west wall of the excavation). The shoring system will be designed by a Professional Engineer experienced in the design of such systems and knowledgeable of local conditions. The initial excavation east of Building 3561 will be approximately 80 ft by 5 or 10 ft deep as shown on Figure 1-6. However, the shoring system will be designed to accommodate an excavation up 14 ft deep and extend 10 feet beyond the northern and southern extents. The shoring wall beyond the ends of the full depth portion will be designed to support the bottom of the excavation sloping up at a 1.5:1 horizontal to vertical ratio.

2.1.7 Excavation of Contaminated Soil

Soil excavations will be performed to remove approximately 842 yd³ of contaminated soil from two separate locations at Site 8. In addition to the contaminated soil, it is expected that an additional 340 yd³ (western area) and 342 yd³ (eastern area) will be excavated to

accommodate proper excavation slopes. The clean soil will be relocated and stockpiled then transferred back to the excavation during the backfill process.

The two areas of contaminated soil at Site 8 are covered with asphalt or concrete. The asphalt and concrete will be saw cut and removed with the contaminated soil. As previously discussed, the area on the east side of Building 3561 will also require shoring along the building foundation. This eastern area will be excavated to 5 ft bls north of sample 08S110 and to the water table (approximately 10 ft bls) south of sample 08S110 (Figure 1-6). The western excavation will extend to the water table (approximately 10 ft bls). Since the excavations depths are expected to stop at groundwater, the final depth will be corrected if groundwater is encountered at different depths. The areas surrounding the excavations are known to be high traffic areas and will be barricaded with high visibility construction fencing. "Danger Stay Out" or similar signs will be posted.

2.1.8 Post Excavation Survey

Upon completion of the excavation in a given contamination area, the excavation will be surveyed to ensure that both the horizontal and vertical boundaries of the delineated area are reached and properly recorded.

2.1.9 Site Restoration

The excavations will be backfilled immediately after the post excavation survey has been completed. The backfill will be placed in the excavation in 1-foot lifts and machine compacted. The soil will be compacted 100% standard or modified proctor. All the excavation areas will be finish graded to meet existing grades/contours and ensure proper drainage.

The backfill soil will be imported from an offsite borrow source that has been both analytically and physically proven suitable.

The asphalt and concrete will be restored with like or similar surfacing as currently exists. The specifications for the resurfacing materials will be concluded as additional design and future use data are gathered. During the installations, asphalt and concrete will be sampled and tested in accordance with ASTM and/or American Concrete Institute (ACI) standards.

2.1.10 Monitoring Well Installation

Following site restoration, the two abandoned monitoring wells will be reinstalled at their previous locations. Well 08-MW-01R will be installed west of Building 3561 and well 08-MW-03R will be installed east of the building. The total depths and screened intervals will be similar to the original construction. Well completion diagrams will be submitted with the project completion report.

Monitoring wells will be installed in accordance with American Society for Testing and Materials (ASTM) Method D-5092, Design and Installation of Groundwater Monitoring Wells in Aquifers. Hollow stem augers will be used to advance 8-inch diameter boreholes to the total drilling depths.

The drill rig, as well as all downhole tools and equipment, will be decontaminated between each monitoring well location to minimize the potential for cross contamination. All wells

will be installed at the desired depth so that the screen extends both below and above the water level in the boring. The wells will be constructed with 10 feet of 2-inch diameter 0.010-inch machine slotted polyvinyl chloride (PVC) well screen and flush joint threaded PVC riser casing.

A washed, graded, 20/30 sand pack will be placed around the well screen to a maximum of 2 feet above the top of the screen. A 1- to 2-foot thick bentonite seal will be placed above the sand pack. After the bentonite seal has been allowed to hydrate for a minimum of 1 hour, cement grout will be added to ground surface. Grout will be placed by the tremie method except when grouting is completed within 5 feet of ground surface, in which case the tremie method is not required.

All wells will be completed with flush-mount covers. A freely draining valve box with a locking bolt-down cover will be installed over the PVC well casing. The casing will be cut approximately 3 inches below and equipped with a watertight cap. A 2-foot by 2-foot by 6-inch deep concrete pad will be installed and sloped to drain water away from the valve box. The pad and well will be marked with the well ID number. Each well will be equipped with a lock. All locks will be keyed so that one key opens locks on all wells. After completion, each well will be developed for up to 1 hour by pumping and surging until the well produces clear water with a minimum of sediment.

2.1.11 Waste Management and Disposal

CH2M HILL will contain, store, maintain, and properly dispose of wastes generated during this CTO including construction debris, contaminated solid waste, and contaminated liquid waste. All waste will be managed in accordance with applicable state and federal regulations, as outlined in Section 4.0 of this Work Plan Addendum. Thorough daily inspections of the work area and waste storage areas will be conducted while personnel are onsite. Specifically, inspections will ensure that no potential or offsite migration of contaminants is allowed to occur.

Contaminated soil will be temporarily stockpiled onsite pending analytical results. During the course of the excavation, all efforts will be made to prevent accumulation of groundwater and stormwater. However, if groundwater or stormwater contacts contaminated soil, it will be contained and subsequently handled as described in Section 4.0 Waste Management Plan.

2.1.12 Decontamination and Demobilization

Prior to leaving the exclusion zone area (i.e., before crossing out of the excavation areas), personnel and equipment will be decontaminated after coming in contact with contaminated material. All decontaminated equipment will be inspected and documented by the Site Health and Safety Specialist (SHSS), Site Quality Control (QC) Manager, or Site Superintendent.

All debris and/or rinsate generated during decontamination activities will remain inside the exclusion zone until it can be containerized and stored properly for legal disposal.

Equipment will be thoroughly decontaminated to remove any contamination adhering to the component surfaces. A low volume high-pressure washer will be used to accomplish equipment decontamination.

Decontamination of personnel and personal protective equipment (PPE) will be performed in accordance with the Health and Safety Plan (HSP) provided in Appendix B and applicable provisions of 29 Code of Federal Regulation (CFR) 1910.120.

Upon completion of the project, both the IRP Manager and the Resident Officer in Charge of Construction (ROICC) will be notified and provide a walkthrough inspection of the work. Once the IRP Manager and ROICC are satisfied with the work in place, personnel and equipment will demobilize from the installation.

2.2 Project Schedule

The anticipated project schedule is provided in Appendix C.

2.3 Communications Plan

A communication matrix outlining the lines of communication for Southern Division and CH2M HILL personnel is presented in Table 2-1. Table 2-2 provides a project personnel directory.

TABLE 2-1
Communications Matrix
OU 13, NAS Pensacola

CH2M HILL Position	Navy Direct Report
Scott Newman, Program Manager	Cory Price, Administrative Contracting Officer
Scott Smith, Senior Project Manager	Jimmy Jones, Contracting Officer's Technical Representation
Amy Twitty, CTO Project Manager	Bill Hill, Remedial Project Manager
	Greg Campbell, IRP Manager – Environmental Department, NAS Pensacola

TABLE 2-2
Project Personnel Directory
OU 13, NAS Pensacola

Contact	Company
Scott Newman Scott Smith Theresa Rojas Scott Dunbar, Site Superintendent	CH2M HILL 115 Perimeter Center Place, N.E. Suite 700 Atlanta, GA 30346-1278 770/604-9182
Joe Giandonato, Contracts	CH2M HILL 1700 Market Street, Suite 1600 Philadelphia, PA 19103-3916 215/563-4220 x507
Rich Rathnow Health And Safety Manager	CH2M HILL 151 Lafayette Drive, Suite 110 Oak Ridge, TN 37830 855/483-9032
Amy Twitty Ryan Bitely, Quality Assurance Manager Cory Price	CH2M HILL 1766 Sea Lark Lane Navarre, FL 32566 850/939-8300 ext. 17 Southern Division Naval Facilities Engineering Command P.O. Box 190010 North Charleston, SC 29419-9010 843/820-5916
Jimmy Jones	Southern Division Naval Facilities Engineering Command P.O. Box 190010 North Charleston, SC 29419-9010 843/820-5544
Bill Hill	Southern Division Naval Facilities Engineering Command P.O. Box 190010 North Charleston, SC 29419-9010 843/820-7324
Greg Campbell	NAS Pensacola 520 Turner Street, Building 746 Pensacola, Florida 32508-5225 850-452-4611, x103

3.0 Sampling and Analysis Plan

This Sampling and Analysis Plan (SAP) outlines the required sampling activities associated with the remediation and monitoring activities at OU 13 at NAS Pensacola. The scope of work will consist of soil excavations in two areas at Site 8. Following attainment of soil remediation cleanup goals, the site will be restored to meet surrounding conditions and specifications. This SAP provides the required analyses for disposal characterization for wastes generated during remedial activities.

The Basewide Work Plan provides sample collection frequency and sampling methodology for borrow source verification, waste characterization and incidental samples collected during the removal and characterization phase of the project completed under this contract; sample quality assurance (QA)/quality control (QC) procedures to be maintained during all sample collection activities; and sample equipment decontamination procedures.

Samples will be collected in accordance with FDEP Standard Operating Procedures, Department of Environmental Regulation DEP-SOOP-001/01 and the EPA Region IV Environmental Investigations *Standard Operating Procedures and Quality Assurance Manual* (SOPQAM) (EPA, 2001). The more stringent requirements of the two documents will apply.

3.1 Data Quality Levels for Measurement Data

The data quality levels for each sampling task described above are listed in Table 3-1. The sampling and analytical requirements, along with the required level of quality and data packages are listed in Table 3-2.

A Navy-, U.S. Army Corps of Engineers (USACE)-, or Air Force Center for Environmental Excellence (AFCEE)-approved laboratory will be used for all sample analyses. In addition, the laboratory will be approved by the State of Florida (Department of Health Environmental Laboratory Certification Program through National Environmental Laboratory Accreditation Center [NELAC] certification).

TABLE 3-1
Data Quality Levels
OU 13, NAS Pensacola

Sampling Activity	Data Quality Level Category
Borrow Source Confirmation Sampling (offsite laboratory analyses)	Definitive
Waste characterization of the contaminated soils and aqueous waste (offsite laboratory analyses)	Definitive

TABLE 3-2
Sampling and Analysis Summary Table
CTO 85

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method (Note 1)	Sampling Equipment (Note 1)	TAT (Note 2)	Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservtn3	Containers
Backfill (Borrow Source)													
Characterization of Backfill Material	Once per material per Off-Site Source	Soil	1 composite sample out of 5 grabs (1 grab for volatiles)	1	Composite 5 random grabs into 1 sample (1 grab for volatiles)	SS spoon, SS bowl, Disposable syringes, (3) Prepared 40 ml vials	7 day	CCI Level C	TCL Volatiles	5035/8260B	14 day	(1) Vials w/ methanol; (2) Vial w/ water; Cool to 4°C	Disposable syringes, (3) Prepared 40 ml vials
									TCL Semi-Volatiles	8270C	14 day extr; 40 day analysis	Cool to 4°C	(4) 8 oz glass
									TCL Pesticides	8081A	14 day extr; 40 day analysis		
									TCL Herbicides	8151A	7 day extr; 40 day analysis		
									PCBs	8082	14 day extr; 40 day analysis		
									TAL Metals	6010A/7471	6 month; Hg 28 days		
									pH	9045B	ASAP	Cool to 4°C	(1) 2 oz amber glass
	Trip Blank	Water	1 per cooler containing volatile samples	1	Prepared by Lab	N/A	7 days	CCI Level C	Volatiles	8260B	14 days	0.025% Na ₂ S ₂ O ₃ , HCl pH<2; Cool to 4°C	(2) 40 ml vial
Post Excavation Stockpile Sampling													
Soil Characterization Sampling	Contaminated soil stockpiles	Soil/ Solids	One per 200 tons	1	Composite 5 random grabs into 1 sample (do not composite VOCs)	Hand auger, SS spoon, SS bowl	7 day	CCI Level B	TCLP Volatiles	1311/8260B	14 day TCLP extr; 14 day analysis	Cool to 4°C	(1) 4 oz glass
									TCLP Semi-Volatiles	1311/8270C	14 day TCLP extr; 7 day extr; 40 day analysis	Cool to 4°C	(5) 8 oz glass

Notes:

- 1) In accordance with FDEP SOPs
- 2) TAT is in calendar days

TABLE 3-2
Sampling and Analysis Summary Table
CTO 85

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method (Note 1)	Sampling Equipment (Note 1)	TAT (Note 2)	Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservtn3	Containers
									TCLP Metals	1311/6010B/7470A	6 month TCLP extr; 6 month analysis Hg: 28 day TCLP extr; 28 day analysis		
									TCLP Pesticides	1311/8081A	14 day TCLP extr; 7 day extr; 40 day analysis		
									TCLP Herbicides	1311/8151A	14 day TCLP extr; 7 day extr; 40 day analysis		
									PCBs	8082	14 day extr; 40 day analysis		
									Corrosivity	9045C	ASAP		
									Ignitability	1010/1020	ASAP		
Decon and Excavation Water													
Characterization of Decontamination and Excavation Water	Drums or Tanks	Water	One per container or 1 per 10 drums	1	Grab	Drum thief or dip jar	4 day	CCI Level B	TCL Volatiles	8260B	14 days	HCl pH< 2; Cool to 4°C	(2) 40 ml vial
									TCL Semi-volatiles	8270C	7 days ext; 40 days analysis	Cool to 4°C	(5) 1L amber glass
									TCL Pesticides	8081A	7 days ext; 40 days analysis		
									PCBs	8082	14 day extr; 40 day analysis		
									Herbicides	8151A	7 days ext; 40 days analysis		
									TAL Metals	6010B/7470A	6 months	HNO3 pH< 2; Cool to 4°C	(1) 500mL HDPE
									Ignitability	1010/1020	ASAP	Cool to 4°C	(1) 250 glass
									pH	9040B	ASAP	Cool to 4°C	(1) 250 glass

Notes:

1) In accordance with FDEP SOPs

2) TAT is in calendar days

3.2 Borrow Source Confirmation Sampling

In order to certify borrow source materials as clean, one representative sample will be collected from each site and source used to provide borrow materials. Sample results will be compared to FDEP SCTLS, Table II, Residential Direct Exposure and leachability to determine if soil is uncontaminated and appropriate for use. The sample collectors will take the following steps in collecting samples:

3.2.1 Procedure for Collecting Volatile Fractions

- Using an auger, split spoon, or similar device, retrieve a core from the stockpile or borrow source area to be tested.
- Remove the core from the auger, split spoon, or other device.
- Open one of the disposable syringes.
- Push the syringe directly into the center of the core and fill to the 5 cc mark.
- Push the contents of the syringe into one of the three vials received from the laboratory.
- Immediately cap the vial (note: ideally, the entire operation—filling the syringe, pushing it into the vial, and capping the vial—should not take longer than 1 minute).
- Repeat the process for the other two vials.
- Label the vials.
- Place the vials in the cooler for shipment to the laboratory.

3.2.2 Procedure for Collecting Non-Volatile Samples

- From five randomly selected sample locations, collect several spoonfuls of the soil into a stainless steel bowl.
- Homogenize the five grab samples by the quartering techniques using the stainless steel spoon.
- Fill the appropriate sample jars completely full with the homogenized sample.
- Close the jar, label, and package the sample for shipment to the laboratory.

The samples will be analyzed in accordance with the procedures listed in Table 3-2. A CH2M HILL Level C package will be required along with appropriate QC samples for the required borrow source samples. Samples will be analyzed on standard turnaround-time (TAT). Both hard copy and electronic files will be submitted for all analytical data.

3.3 Solids Characterization

3.3.1 Pre-Characterization

CH2M HILL collected soil characterization samples from the center of each excavation area in April 2004; analysis has indicated that the soil to be removed is non-hazardous. However, additional waste profile samples will be collected during the excavation activities.

3.3.2 Post Excavation Characterization

One composite sample per 200 tons will be collected from the stockpiled soil, comprised of a minimum of 5 aliquots randomly selected from the stockpile. Volatile samples must be collected as a grab and will not be composited. Analyses will be provided on a minimum 7-day turnaround time basis.

3.3.2.1 Procedure for Collecting Volatile Fractions

- Collect the volatile sample as a single grab from one of the five sample locations using a stainless steel spoon.
- Fill the appropriate sample jars completely full with the sample grab.
- Close the jar, label, and package the sample for shipment to the laboratory.

3.3.2.2 Procedure for Collecting Non-Volatile Samples

- Collect grab samples from each of the five sample locations using the stainless steel spoon.
- Place the five grab samples into the stainless steel bowl.
- Homogenize the five grab samples by the quartering techniques using the stainless steel spoon.
- Fill the appropriate sample jars completely full with the homogenized sample.
- Close the jars, label, and package the sample for shipment to the laboratory.

The samples will be analyzed in accordance with Table 3-2. A CH2M HILL Level B package will be required along with appropriate QC samples for the required waste characterization and incidental wastestream samples. Samples will be analyzed on standard TAT. Both hard copy and electronic files will be submitted for all analytical data.

3.4 Water Characterization

Water characterization samples will be collected to evaluate the handling, transportation, and disposal requirements of generated water at the site. Water generated from the site will be containerized, sampled, and analyzed separately. It is anticipated that the aqueous waste will be containerized in drums or portable tanks. One characterization sample will be collected one per portable tank or one composite sample per 10 drums. The sample collectors will take the following steps in collecting samples:

- A sample will be collected from the drums or tanks using either a dip jar or bailer.
- The sample containers for volatiles analyses will be filled first.
- The 40-milliliter (ml) vials will be filled so there is no headspace in each vial.
- The sample containers for the remaining analyses will then be filled.

The samples will be analyzed in accordance with Table 3-2. A CH2M HILL Level B package will be required along with appropriate QC samples for the required waste characterization and incidental wastestream samples. Samples will be analyzed on standard TAT. Both hard copy and electronic files will be submitted for all analytical data.

3.5 Field Activities

Field activities will be performed as listed in Table 3-3.

TABLE 3-3
Field Activities
OU 13, NAS Pensacola

Field Activity	Frequency	Equipment	Sample Point
Borrow Source Sampling	Once per Source	(See Table 3-2)	Borrow Source
Aqueous Disposal Sampling	One sample per portable tank or one composite sample per 10 drums	(See Table 3-2)	Drums or Tanks
Solid Disposal Sampling	One composite sample, per each 200 tons, comprised of a minimum of 5 aliquots	(See Table 3-2)	Stockpile

3.5.1 Sample Documentation

Sampling documentation will include numbered chain-of-custody (COC) reports, sample labels, custody seals (minimum of two on each shipping container), and a sample log book, which includes the following information:

- Name of laboratories and contacts to which the samples were sent, TAT requested, and data results, when possible
- Termination of a sample point or parameter and reasons
- Unusual appearance or odor of a sample
- Measurements, volume of flow, temperature, and weather conditions
- Additional samples and reasons for obtaining them
- Levels of protection used (with justification)
- Meetings and telephone conversations held with the NAVFAC EFD SOUTH, Navy Technical Representative (NTR), regulatory agencies, project manager, or supervisor
- Details concerning any samples split with another party
- Details of QC samples obtained

- Sample collection equipment and containers, including their serial or lot numbers
- Details of QC samples obtained
- Identification of field analytical equipment and equipment used to make physical measurements
- Calculations, results, and calibration data for field sampling, field analytical, and field physical measurement equipment
- Property numbers of any sampling equipment used, if available
- Sampling station identification
- Date and time of sample collection
- Description of the sample location
- Description of the sample
- Names and company of samplers
- Method used to collect the sample
- Diagrams of processes
- Maps/sketches of sampling locations
- Weather conditions that may affect the sample (e.g., rain, extreme heat or cold, wind)

3.5.2 Field Quality Control Sampling

Field quality control samples are not required for disposal sampling. Borrow source sampling requires a trip blank, but no other field quality control samples. Quantity and frequency are detailed in Table 3-2.

3.6 Sampling Deliverables

Samples will be analyzed by the laboratory using the methods summarized in Table 3-2. Preliminary analytical results will be faxed to Bonnie Hogue at the following fax number per the TAT listed in Table 3-2 from day of sample receipt. The final hardcopy data and electronic file will be delivered to Melissa Osborne within 14 days of sample receipt.

Bonnie J. Hogue
CH2M HILL
770-604-9182 ext. 263
EFax: 678-579-8106
bhogue@ch2m.com

Melissa Osborne
CH2M HILL
115 Perimeter Center Place, Suite 700
Atlanta, GA 30346
(770) 604-9182 ext. 614
EFax: (678) 579-8135
mosborne@ch2m.com

4.0 Waste Management Plan

The scope of this waste management plan addresses the management and disposal requirements for wastes generated during soil excavation at the Site 8. It is anticipated that the following wastes will be generated during these activities:

- Dieldrin and/or cadmium contaminated soil from the excavations at the Site 8.
- Decontamination water and, potentially, excavation contact water.
- Debris including materials used in decontamination (e.g., plastic sheeting, sampling materials and personal protective clothing).

4.1 Waste Characterization

Wastes will be characterized according to the SAP in Section 3.0 of this work plan. CH2M HILL will provide analytical data from the pre-characterization sampling and analysis event to the facility with the waste profile form provided by the offsite facility. It is expected that contaminated soil and water will be managed as non-hazardous wastes.

Waste characterization information for wastes shall be documented on a waste profile form provided by the offsite treatment or disposal facility as part of the waste acceptance process. The profile will be reviewed and approved by the CH2M HILL Waste Coordinator prior to submission to the Navy for generator signature. The Navy will be responsible for providing generator certification and/or signature (if required). CH2M HILL will coordinate this with Mr. Campbell. The signed profile will then be submitted to the disposal facility for acceptance and approval.

The profile typically requires information including but not limited to the following:

- Generator (Navy) information including name, address, contact, and phone number
- Site name including street/ mailing address
- Process generating waste (e.g., soil removal and well installation)
- Source of contamination (e.g., JP5 tank)
- Historical use for area
- Waste composition (e.g., 95 percent soil, 5 percent debris)
- Physical state of waste (e.g., solid, liquid)
- Applicable hazardous waste codes
- A facility-approved copy of the waste profile shall be received prior to scheduling offsite transportation of the waste

4.2 Waste Management

4.2.1 Waste Storage Time Limit

Any waste that is characterized as hazardous will be removed from the site within 90 days from generation. Other wastes characterized as non-hazardous will be removed from the site as soon as possible.

CH2M HILL expects that the contaminated soil from Site 8 will be temporarily stockpiled onsite pending analytical results and delivered to the disposal facility. Debris to the extent possible will be removed with the contaminated soil.

Excavation contact water and decontamination water is expected to be characterized as non-hazardous and will be removed from the site as soon as possible.

4.2.2 Labels

The labeling of waste containers will be in accordance with 49 CFR 172, 173, and 178. Labels will include the type of waste, location from which the waste was generated, and accumulation start date. Containers and tanks used to store/accumulate waste (including soil and groundwater) will include one of the following labels:

“Analysis Pending” or “Waste Material” - Temporary or handwritten label until analytical results are received and reviewed. This label will include the accumulation start date.

“Hazardous Waste” - Pre-printed hazardous waste labels with the following information:

- Accumulation start date
- Generator Name
- USEPA ID number
- Waste codes
- Prior to transport the Manifest number must be added (for containers of less than 110-gallon capacity)

“Non-Hazardous Waste” - Preprinted labels with the following information:

- Accumulation start date
- Generator name
- USEPA ID number
- Waste-specific information (e.g., contaminated soil)

Where applicable, the major hazards (e.g., flammable, oxidizer, and carcinogen) will be included on the label.

4.2.3 General Waste Management Requirements

CH2M HILL will contain and store all removed soil, debris, and contaminated solid and liquid wastes (such as PPE and sheeting used during the course of the remedial activities) in accordance with all applicable rules and regulations until it is disposed of offsite.

In general, hazardous wastes will be segregated from non-hazardous wastes. Additionally, incompatible wastes (e.g., flammable and corrosive wastes) will be segregated. Wastes of

the same matrix, contamination, and the same source may be aggregated to facilitate storage and disposal.

Stockpiles of non-hazardous soil are expected and will be placed in lined bermed areas and kept covered unless adding or removing waste. All stockpiles will be underlain by minimum 10-mil thick polyethylene sheeting and bermed to prevent surface water run-on/run-off. When not in use, stockpiles will be covered with minimum 6-mil thick polyethylene sheeting and adequate weighting to prevent the sheeting from moving. Liquid wastes will be contained in drums or tanks for offsite disposal at an approved wastewater treatment facility.

Wastes will be stored in an area identified or approved by the Navy. If a storage area is not designated, CH2M HILL will accumulate hazardous wastes in an area that is not accessible to the public, and that can be secured.

Waste storage areas will contain appropriate emergency response equipment. The HSP (Appendix B) identifies the specific emergency response procedures and equipment. Hazardous waste storage areas will include fire extinguishers (in areas where wastes are known or suspected to be flammable or ignitable), decontamination equipment, and an alarm system (if radio equipment is not available to all staff working in accumulation area). Spill control equipment (e.g., sorbent pads) will be available in areas where wastes are stored and where liquids are transferred from one vessel to another.

All containers, drums, and tanks will be inspected upon arrival at the site for equipment in disrepair and any contamination or contents. If a container contains waste upon arrival or is in disrepair, it will be immediately rejected and documented.

Any water that comes in contact or potentially has contact with contaminated material will be collected, containerized, and managed as liquid waste. This waste and other liquid wastes, such as decontamination rinsate, will be contained in portable storage tanks or 55-gallon drum(s). The containerized liquid wastes will be stored in accordance with all applicable rules and regulations until it is treated/disposed of offsite. The liquid waste will be managed, characterized, and properly transported and disposed as specified in the following sections.

CH2M HILL will maintain the containment/storage area, including replacement of any worn or damaged containment materials. Daily inspections of the containment/storage area will be performed to verify there are no ruptures to containers, ensure all containers are properly labeled with labels visible, and maintain good housekeeping. Inspections will be documented and these records will be turned over to the Navy with the Contractor Quality Control Report Forms.

4.2.3.1 Drums/Small Containers

The following guidelines relate to drums and small containers:

- Drums and small containers will be transported to the temporary accumulation areas on wood pallets and will be secured together with non-metallic banding.
- Drums will be inspected and inventoried upon arrival onsite for signs of contamination and/or deterioration.

- Adequate aisle space (e.g., 30 inches) will be provided for containers such as 55-gallon drums to allow the unobstructed movement of personnel and equipment. A row of drums should be no more than two drums wide.
- Each drum will be provided with its own label, and labels will be visible.
- Drums will remain covered except when removing or adding waste to the drum. Covers will be properly secured at the end of each workday.
- Drums will be disposed with the contents. If the contents are removed from the drums for offsite transportation and treatment or disposal, the drums will be decontaminated prior to re-use or before leaving the site.
- Drums containing liquids or hazardous waste will be provided with secondary containment.

4.2.3.2 Tanks

- The following procedures will be implemented for tanks:
- Tanks will be inspected upon arrival onsite for signs of deterioration and contamination. Any tank arriving onsite with contents or in poor condition will be rejected.
- Tanks will be provided with covers and secondary containment.
- Only non-stationary tanks (such as a cargo tank or other wheeled tank) will be used to accumulate hazardous waste.
- Each tank will be labeled as discussed above.

4.2.3.3 Inspection of Waste Storage Areas

Waste accumulation areas will be inspected for malfunctions, deterioration, discharges, and leaks that could result in a release. The following inspection schedule will be followed:

- At least weekly inspection of containers, tanks, and stockpiles (for leaks, signs of corrosion, or signs of general deterioration).
- At least weekly inspection of stockpiles (for liner and berm integrity)

Any deficiencies observed or noted during inspection will be rectified immediately. Appropriate measures may include transfer of waste from leaking container to new container, replacement of liner or cover, or repair of containment berm, etc. Inspections will be recorded in the daily Quality Control Report (QCR) and include the deficiencies and how the issue was rectified. Copies of the QCR will be maintained onsite and available for review.

If operations will be suspended for more than seven days, the regulatory compliance manager will be contacted and alternate inspection arrangements made. Prior to demobilization, all hazardous wastes will be removed from the site.

4.3 Shipping Documentation

Prior to offsite disposal of any waste, CH2M HILL shall provide the Navy with a waste approval package for each waste stream. This package shall include a waste profile naming the U.S. Navy as the generator of the waste, analytical summary table(s) applicable to the waste, Land Disposal Restrictions (LDR) notification for any hazardous wastes, a completed waste manifest, and any other applicable information necessary for the Navy to complete its review of the disposal package and sign as the generator.

The signed profile will then be submitted to the disposal facility for acceptance and approval. Once the approval letter is received from the disposal facility, transportation can be scheduled.

Each load of waste material will be manifest prior to leaving the site. At a minimum, the manifest form will include the following information:

- Generator information including name, address, contact, phone number, EPA ID number
- Transporter information including name, address, contact, phone number, EPA ID number
- Facility information including name, address, phone number, EPA ID number
- Site name including street/ mailing address
- U.S DOT Proper Shipping Name (e.g., Hazardous Waste Solid, numbers 9, UN 3077, PG III (D008))
- Type and number of containers
- Quantity of waste (volumetric estimate)
- CTO or job number
- Profile number
- 24 hour emergency phone number

Additionally, each shipment of waste will have a weight ticket. An LDR Notification/Certification is also required for hazardous wastes. This form also requires the generator's signature and submission to the disposal facility.

The generator (Navy) and the transporter must sign the manifest prior to each load of waste leaving the site. A copy of the manifest will be retained onsite and included with the daily QCR. The original fully executed manifest (includes signatures of generator, transporter, and accepting facility representative) will be returned to the address of the generator. The facility will provide a copy of this fully executed manifest to CH2M HILL for the final report. The final report will include copies of the fully executed manifest, weight ticket, LDR (if applicable), and the Certificate of Disposal/Destruction/Recycle.

If the signed hazardous waste manifest from the designated offsite facility is not received within 35 days, CH2M HILL will contact the transporter or the designated facility to

determine the status of the waste. If the signed hazardous waste manifest has not been received within 45 days, CH2M HILL, in coordination with the Navy, will issue an "Exception Report" to the state of Florida, as required under 40 CFR 262.42.

4.4 Transportation

Dump trucks used to transport contaminated soil offsite will be inspected prior to loading for signs of deterioration and residual contamination. Any dump truck with contents or in poor condition will be rejected.

Each transportation vehicle and load of waste will be inspected before leaving the site and documented. The quantities of waste leaving the site will be documented, at a minimum, on the Transportation and Disposal Log (T&D Log). A contractor licensed for commercial transportation will transport non-hazardous wastes. In the event wastes are hazardous, the transporter will have a USEPA identification number, and will comply with transportation requirements outlined in 49 CFR 171-179 (Department of Transportation) and 40 CFR 263.11 and 263.31 (Hazardous Waste Transportation). A copy of the documentation indicating that the selected transporter has appropriate licenses will be received and approved by CH2M HILL prior to transport of any waste.

4.4.1 Transporter Responsibilities

The transporter will be responsible for weighing loads at a certified scale. For each load of material, weight measurements will be obtained for each full and empty container or dump truck. Disposal quantities will be based on the difference of weight measurements between the full and empty container or dump truck. Weights will be recorded on the waste manifest. The transporter will provide copies of weight tickets to CH2M HILL.

The transporter will observe the following practices when hauling and transporting wastes offsite:

- Minimize impacts to public traffic.
- Repair road damage caused by construction and/or hauling traffic.
- Clean up waste spilled in transit.
- Line and cover trucks/trailers used for hauling contaminated waste to prevent releases and contamination.
- Decontaminate vehicles prior to re-use, other than hauling contaminated waste.
- Seal trucks transporting liquids.

All personnel involved in offsite disposal activities will follow safety and spill response procedures outlined in the Health and Safety Plan

No materials from other projects will be combined with materials from NAS Pensacola.

4.4.2 Transportation and Disposal Log

The T&D Log is used to track waste from generation to final disposition. Wastes will be logged into the T&D Log the day waste is generated and placed into containers.

Transportation of wastes will be inventoried the day of transportation from the site using the T&D Log. Final disposal will be documented on the T&D Log using the Certificate of Disposal (CD).

5.0 Environmental Protection Plan

The Environmental Protection Plan (EPP) of the Basewide Work Plan addresses general procedures that will be implemented to prevent pollution and protect the environment. The purpose of this plan is to provide specific requirements/procedures to protect the environment during soil excavation activities at NAS Pensacola.

5.1 Regulatory Drivers

Remediation activities at OU 13 are regulated under CERCLA. All solid/hazardous waste and media will be characterized and managed according to the requirements of EPA's 40 CFR, Hazardous Waste Regulations.

5.2 Spill Prevention and Control

The provisions for spill prevention and control establishes minimum site requirements. Subcontractors are responsible for spill prevention and control related to their operations. Subcontractors' written spill prevention and control procedures must be consistent with this plan. All spills will be reported to the CH2M HILL site supervisor and/or project manager. The Health and Safety Plan provides details for emergency response procedures and further reporting requirements.

5.3 Spill Prevention

All fuel, chemical, and waste storage areas will be properly protected from onsite and offsite vehicle traffic. All tanks (including fuel storage and waste storage) must be equipped with secondary containment. These tanks must be inspected daily for signs of leaks. Accumulated water must be inspected for signs of contamination (e.g., product sheen, discoloration, and odor) before being discarded. Fire protection provisions outlined in the health and safety plan and in subcontractor plans must be followed.

Chemical products must be properly stored, transferred, and used. Should chemical product use occur outside areas equipped with spill control materials, adequate spill control materials must be maintained at the local work area.

5.4 Spill Containment and Control

Spill control materials will be maintained in the support zone, at fuel storage and dispensing locations, and at waste storage areas. Incidental spills will be contained with sorbent and disposed properly. Spilled materials must be immediately contained and controlled. Appropriate spill response includes the following procedures:

- Immediately warn any nearby workers and notify supervisor.

- Assess the spill area to ensure that it is safe to respond.
- Evacuate area if spill presents an emergency.
- Ensure any nearby ignition sources are immediately eliminated.
- Stop the source of the spill.
- Establish site control for spill area.
- Contain and control spilled material through use of sorbent booms, pads, or other material..
- Use proper PPE in responding to spills.

5.5 Spill Cleanup and Removal

All spilled material, contaminated sorbent, and contaminated media will be cleaned up and removed as soon as possible. Contaminated spill material will be drummed, labeled, and properly stored until material is disposed. Contaminated spill material will be managed as waste (see Waste Management Plan) and disposed according to applicable, federal, state, and local requirements.

5.6 Endangered Species Protection

The area is an industrial site completely covered with asphalt. There is no reasonable expectation that any flora or fauna will be impacted by the remedial activities.

5.7 Erosion Control

During those excavation activities that have the potential to disturb the land, CH2M HILL will adhere to the following practices:

- The smallest practical area will be disturbed.
- Temporary erosion and sediment controls will be used to prevent sediment from discharging to any ponds or wetland areas. Structural controls may include the use of straw bales, silt fences, earth dikes, drainage swales, sediment traps, and sediment basins.
- Material staging areas will be properly barricaded to contain and control run-off.

6.0 Quality Control Plan

The Quality Control Plan provided in the Basewide Work Plan details the quality administrators, the project organization for the work to be completed at NAS Pensacola, and the definable features of work for each project site.

The Submittal Register, included in Appendix D of this Work Plan Addendum, documents submittals in accordance with Appendix B of CH2M HILL's Contract Management Plan (dated July 1998). CH2M HILL, the Navy, or others will approve submittals as identified in the Submittal Register. All approved submittals will be distributed by CH2M HILL to the appropriate Navy personnel (Contracting Officer [CO], ROICC [in duplicate], etc.), the project site, and to the job file.

The site-specific project organization chart, included in this section of the work plan addendum as Figure 6-1, depicts the chain-of-command for this CTO and the individuals responsible for executing the work as indicated. Roles and responsibilities are summarized in Table 6-1.

6.1 Testing Requirements

The Project QC Manager will be Ryan Bitely. The appointing letter for Ryan Bitely is included in Appendix E.

6.2 Testing Requirements

This section describes construction testing and environmental analysis laboratories and their certifications; environmental sampling and analysis, and test control. The Testing Plan and Log will summarize the testing planned and comprehensive log of testing performed at the site. The log will be updated as testing is performed and submitted with the daily quality report on a monthly basis. The Testing Plan and Log is provided in Appendix F.

6.2.1 Identification and Certification of Testing Laboratories

Mitkem Corporation, located in Warwick, Rhode Island, will be used as the environmental testing laboratory subcontractor for this CTO project.

6.2.2 Construction

Construction testing to support the work activities under this CTO will be performed using laboratories that are certified by the National Institute of Standards and Technology (NIST), National Voluntary Laboratory Accreditation Program (NVLAP), American Association of State Highway and Transportation Officials (AASHTO), or the American Association for Laboratory Accreditation (AALA).

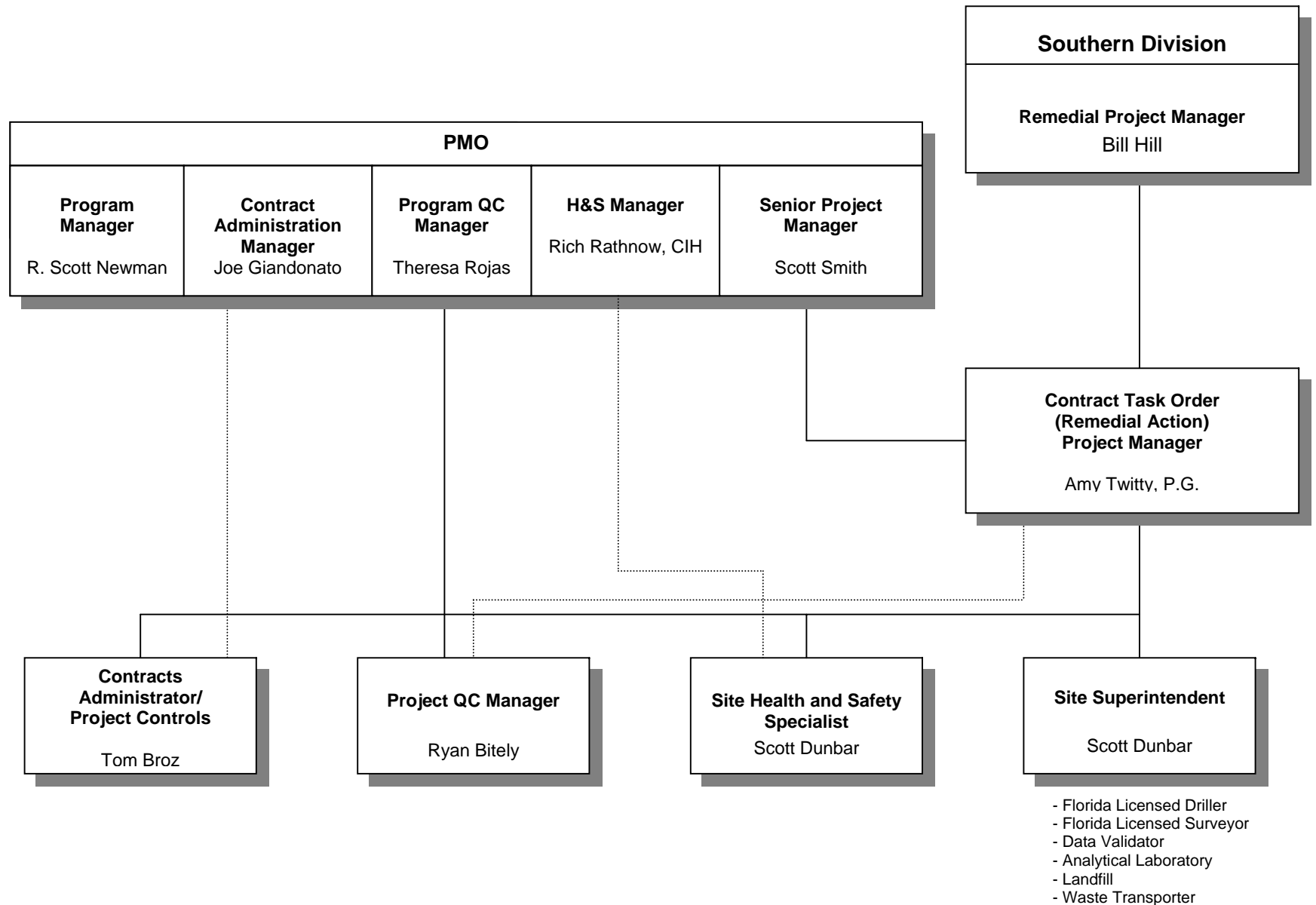


TABLE 6-1

Roles, Responsibilities, and Authorities of Individuals Assigned to the NAS Pensacola Project
OU-13, NAS Pensacola

Role	Responsibility	Authority
Project Manager	<ul style="list-style-type: none"> • Management and Technical Direction of work • Communication with Southern Division RPM and NTR • Overview subcontractor performance • Select CTO staff • Develop CTO Work Plan and supporting plans • Meet CTO Performance Objectives • Prepare status reports • Prepare Field Change Reports 	<ul style="list-style-type: none"> • Approve subcontractor selection • Approve invoices to Southern Division • Approve CTO baseline schedule • Stop work at the site for any reason • Approve payment to vendors and suppliers • Approve payment to subcontractors • Review technical qualifications of subcontractors • Respond to Design Change Notices
Site Superintendent	<ul style="list-style-type: none"> • Responsible for all site activities • Provide direction to subcontractors • Act for Project Manager • Provide daily status reports • Prepare CTO Work Plan • Conduct daily safety meetings • Review subcontractor qualifications • Stop work for unsafe conditions or practices 	<ul style="list-style-type: none"> • Stop work for subcontractors • Approve corrective action for site work-arounds • Approve materials and labor costs for site operations • Resolve subcontractor interface issues • Approve daily and weekly status reports
Project QC Manager	<ul style="list-style-type: none"> • Monitor and oversee subcontractor compliance with scope of work • Review request for changes in scope of work • Recommend improvements in work techniques or metrics • Recommend work-around to Site Superintendent • Monitor and report on subcontractor quality and quantities • Audit subcontractors offsite fabrication • Maintain Submittal Register • Participate in Continuous Improvement Team 	<ul style="list-style-type: none"> • Complete daily compliance report • Monitor and report on subcontract quality and quantities • Audit subcontractors offsite fabrication • Maintain Submittal Register • Stop work for non-compliant operations • Maintain Rework Items list • Stop work for non-compliant operations
Site Health and Safety Specialist	<ul style="list-style-type: none"> • Monitor and report on subcontractor safety and health performance • Record and report safety statistics • Conduct needed site safety and health orientation • Maintain Environmental Log • Stop work for unsafe practices or conditions 	<ul style="list-style-type: none"> • Stop work for unsafe practices or conditions • Approve subcontractor site specific health and safety plan • Set weekly safety objectives • Approve resumption of work for resolved safety issues
Subcontract Specialist	<ul style="list-style-type: none"> • Prepare bid packages • Purchase disposable materials • Maintain subcontract log • Approve payables for disposable items • Maintain government property records 	<ul style="list-style-type: none"> • Provide project scheduling coordination • Responsible for site cost tracking and reporting • Maintain record of site purchases

Testing to be performed at NAS Pensacola for this project is listed in Table 6-2.

TABLE 6-2
Testing Requirements
OU-13, NAS Pensacola

Test/Inspection	Requirement/Reference	Frequency
Soil Compaction		
Site 8 (to within 4 feet below subgrade elevation)	Inspection	Continuous inspection of compaction effort, place soils in loose lifts of approximate 12-inch thickness
Site 8 (upper 3 feet of subbase)	100% max dry density for noncohesive soils, 95% for cohesive soils; by ASTM D698 standard proctor - Note: ASTM D1557 modified proctor may be required depending on magnitude of maximum load	Per 12-inch compacted lift within 3 feet of subbase; additional random tests as conditions change
Outside pavement or concrete areas	Inspection	No testing on top 4 inches of grade
Soil Classification	ASTM D2487	Representative sample of each backfill source
Concrete		
Compressive Strength	[To be determined] pounds per square inch minimum at 28 days/ASTM C-31/39	At least one per 150 cubic yards or per batch, each day concrete delivered
Slump	To be determined/ASTM C-143	At least one per 150 cubic yards or per batch, each day concrete delivered
Air Content	To be determined/ASTM C-260	At least one per 150 cubic yards or per batch, each day concrete delivered
Asphalt Pavement		
Mix Design	[To be determined], asphalt content per ASTM D2172 or ASTM D6307; Gradation by ASTM C 136	Once per source
Mat Density	[To be determined]	At least once per lift
Stability and Flow	[To be determined]	Once per batch
Joint Density	[To be determined]	At least once per lift
Smoothness	Field measurement with a straightedge at least 12 feet long, no greater than ¼ inch variance on finish surface course	As directed by CH2M HILL, but at a minimum every 50 feet of installation
Thickness	Field measurement using measuring tool with 1/8 th inch graduations	As directed by CH2M HILL
Surveying	Horizontal – Mercator Projection, GRS 80, State Plane Coordinate System, North American Datum 1983, Lambert Zones 1 – 6, feet; Vertical – Mean Sea Level, North American Vertical Datum, 1988, feet.	Excavation areas – locate excavation boundaries and sample points, determine excavated volumes; Locate – boring/well/Geoprobe® points, monuments, and establish control points; topographic surveys

6.2.3 Environmental

Soil, water, and solids will be sampled under the direction of CH2M HILL or its subcontractors. Laboratories performing analysis of environmental samples will be approved by NELAC, NVLAP, or AALA.

6.3 Construction Inspections

The construction inspections planned for the remedial activities at NAS Pensacola will be performed in accordance with the three phases of control. The definable features of work for the project are mobilization and site preparation, sampling, excavation and backfill, field surveying, and site restoration. The construction inspections associated with the definable feature of work items are described in the following subsections.

6.3.1 Mobilization and Site Preparation

As part of the mobilization activity, a pre-construction meeting will be held to review the preparedness to begin the project and the schedule. The preparedness check will verify that the permitting/approvals are in place for the scheduled remediation activities, and that the resources mobilized to the field have been inspected are in conformance with the project specifications and are acceptable. The site preparation task will include establishing and demarcating the work zones, obtaining utility clearances, preparing laydown and staging areas, and installing erosion and sediment control provisions before excavation activities begin. The following quality controls will be implemented during the mobilization and site preparation activities.

6.3.1.1 Preparatory Phase

The preparatory phase will include a review of the relevant activity hazard analyses (AHAs), the project work plan, communications matrix, project schedule, submittal status, and confirmation that appropriate resources, materials, and equipment are available.

6.3.1.2 Initial Phase

Inspections will be made as necessary to ensure construction limits are defined, utilities marked, and equipment staged in the designated areas. Field measurements will be made of the excavation footprint and recorded.

6.3.1.3 Follow-up Phase

The Project QC Manager will provide continuous oversight of the site preparation activities to verify that the work is completed in accordance with the requirements provided in this work plan. Deficiencies will be noted and corrected.

Task	Procedures/Construction Details
Pre-construction Meeting	<ul style="list-style-type: none">-Security badges obtained and Personnel List updated-Verify utility location, marking, and protection-Verify the limits of the work area and the satisfactory setup of temporary fencing-Verify implementation of environmental protection measures (erosion and sediment control)-Verify collection, staging and management of metal and concrete debris in accordance with the Waste Management Plan

6.3.2 Sampling

Soil, solid waste, and generated or accumulated aqueous wastes will be sampled. Environmental samples will be collected in accordance with EPA methods and procedures. Other controls will include, but are not limited to, maintaining a COC; proper handling, packing, and shipping; and the use of qualified laboratories.

6.3.2.1 Preparatory Phase

The preparatory phase for sample collection activities includes a review of the sampling procedures provided in the sampling and analysis plan, verifying acceptance of the selected laboratory for offsite sample testing, and confirming that the appropriate equipment and materials are available to complete the sampling activities.

6.3.2.2 Initial Phase

Delineation and waste characterization samples will be collected and subsequently analyzed at an approved laboratory in accordance with methods outlined in the project specific sampling and analysis plan. Sample collection activities, including proper COC custody documentation, will follow the protocols outlined in the project specific sampling and analysis plan.

6.3.2.3 Follow-up Phase

Sample collection locations and activities will be properly documented throughout each sampling event. Analytical reports from the approved laboratory will be reviewed for accuracy and completeness. If required, data quality and quality assurance information from the laboratory will be reviewed to verify discrepancies in the analytical data. CH2M HILL quality assurance personnel will review and tabulate laboratory data and field sampling results. Environmental samples will be collected in accordance with EPA methods and procedures.

Task	Procedures/Construction Details
Excavated Soil and Debris	<ul style="list-style-type: none">-Visual inspection of sampling activity and collection of photographic records-Document existing monuments and structures-Collect representative, in-situ samples of contaminated soil for waste characterization-Acquire copy of laboratory certification-Verify appropriate facilities and testing equipment are available and comply with testing standards-Verify the field instruments are calibrated in accordance with manufacturers' recommendations-Document field measurements of sample locations-Verify recording forms, including all of the test documentation requirements, have been prepared and are accurate and complete
Borrow Soil	<ul style="list-style-type: none">-Collect representative sample for disposal characterization in accordance with the SAP-Sketch a map of borrow site and locations of samples, document location of borrow site-Coordinate sample shipment and delivery with laboratory
Concrete	<ul style="list-style-type: none">-Sample concrete in accordance with ASTM C172

6.3.3 Soil Excavation and Backfill

The shoring system will be designed and installed to protect the Building 3561 foundation and site workers during the remedial activities. Reviewing the AHAs and the shoring installation plan, inspecting the associated equipment, and appointing the excavation competent person are required before removal and installation activities begin.

Additionally, implementing the traffic control plan and maintaining proper control of the work area are key to ensuring that the task is executed without incident and meets the objectives of this work plan addendum.

Materials will be inspected and tested before accepting onto the project site. Onsite testing of materials has been selected to quantify the products and specific properties both during installation and on installed products. Routine inspections will be performed to ensure quality materials and workmanship, and to monitor for deficiencies.

6.3.3.1 Preparatory Phase

The preparatory phase will include reviewing the requirements of the work plan, reviewing the proposed excavation area, verifying acceptance and approval of the utility clearance, and confirming that appropriate equipment (shoring, excavator, etc.) and subcontractors are available to complete the work. The excavation competent person will be identified and the logistics of soil excavation and removal will be discussed. Before excavation activity begins, site controls including construction barricades, roadway signs, and waste containers will be staged. The excavation area at the work site will be marked with physical markers such as flags or stakes, as appropriate. The following articles will be reviewed:

- Qualifications of the disposal, recycling, or treatment facility(s)
- Transportation schedule for hauling material offsite
- Appropriate equipment and materials, such as waste manifests,
- Relevant AHAs

6.3.3.2 Initial Phase

As the excavation commences, the project QC manager will complete the initial inspection to verify that the delineated excavation area follows the planned pathway based on the layout of the limits defined by the delineation effort. This phase also includes inspecting the waste transport vehicles (rolloffs, end-dumps, transports, etc.) prior to accepting on the job. Containers used for soil transport shall be lined prior to loading. Containers used for transporting liquids shall be free of liquids or other foreign materials prior to filling. Information provided on the waste manifest must be verified to be complete and accurate including, but not limited to, generator name and signature, date, type of material being hauled, designated recycling or treatment facility, and volume and/or weight of material. Any discrepancies on waste manifest documents must be corrected. Deficiencies will be documented and corrected as necessary.

6.3.3.3 Follow-up Phase

The Site Superintendent will be responsible for the overall management of the excavation and backfilling activities. Routine surveillance shall ensure that the work is being completed according to the work plan provisions. A field logbook and an electronic log of all transportation and disposal shipments must be maintained. Containers, tanks, and roll-off

boxes will be inspected for signs of contamination and/or deterioration and inventoried upon arrival onsite using the T&D Log. Waste storage areas (including areas with stockpiles, containers, tanks, roll-off boxes) will be visually inspected on a daily basis for releases or signs of corrosion, deterioration, or other conditions that could result in a release. The results of these inspections will be recorded. The following quality controls will be implemented during the excavation activities.

Task	Inspection/Construction Control
Excavation	<ul style="list-style-type: none"> -Conduct walk-through of the area, observe all work activities, document in field logbooks -Inspect shoring equipment and materials for integrity, maintenance, and appropriateness for job -Monitor excavation slopes and adherence to design grades -Verify vertical and horizontal control -Measure and record dimensions and physical observations of excavations -Load excavated soils into approved transport containers -Inspect waste handling and waste management procedures for conformity with the waste management plan -Select locations for collecting post excavation samples and document
Backfill	<ul style="list-style-type: none"> -Verify that post excavation confirmation results meet the clean up goal and excavated areas are acceptable for backfill -Ensure that borrow soil is acceptable for backfill -Monitor backfill for approximately even thickness lifts of no greater than 18 inches, no greater than 12 inches per lift during top four feet of fill -Select locations for performing compaction testing, monitor frequency of testing -Request additional compaction testing if soil conditions change -Inspect backfill materials for consistency, foreign or deleterious matter, free from vegetative debris -Verify thickness of granular fill layer placed (4 inches minimum) -Coordinate field surveying

6.3.4 Site Surveying

A professional land surveyor registered in the state of Florida will conduct surveying, which will include the following tasks:

- Generate record as-built drawings.
- Survey site features and monuments to create a site layout map capturing the extent of the fuel contamination.
- Survey the locations of the headspace screening area footprint and locations of the post excavation confirmation samples.
- Create an as-built drawing of the remediation site.

The Site Superintendent is responsible for verifying conformance of final lines and grades with the contract documents, and coordinating confirmation with the Project QC Manager.

All survey data must conform to the Tri-Service Spatial Data Standards (TSSDS). Horizontal controls for graphic and non-graphic information are Mercator Projection, GRS 80, State Plane Coordinate System, North American Datum 1983, Lambert Zones 1 through 6 (or

appropriate zone for region to be mapped). Vertical controls are Mean Sea Level, North American Vertical Datum 1988.

Some of the QC controls that will be inspected or verified are the following:

- Surveyor Qualifications/License
- Establishment of Temporary Control Points
- Verification of Existing Monuments
- Protection: Monuments and Control Points
- Instrument Calibration and Accuracy
- Horizontal and Vertical Control
- Surveying Tolerances (horizontal, vertical, angles)
- Reference to Applicable Plane Coordinates and Vertical Datum
- Surveyor notes legibility, accuracy, and completeness
- Electronic and Hard Copy Data Deliverables
- Stake Flagging / Marking
- As-builts, drawings, and maps

6.3.5 Site Restoration

The specific details and requirements of the site restoration will be developed as the design data are obtained and evaluated. Once this assessment is made, the work plan will be revised with the construction details for the concrete restoration and/or asphalt replacement. Grassed areas disturbed by construction equipment traffic will be seeded or sodded to re-establish vegetative cover. The erosion and sediment controls shall remain in place until vegetative cover is established.

6.4 CTO Support Organizations

Mitkem Corporation will be used as the environmental testing laboratory for this CTO project.

7.0 References

CH2M HILL Constructors, Inc. Basewide Work Plan Naval Air Station Pensacola, Pensacola, Florida. June 2000.

CH2M HILL Constructors, Inc. Contract Management Plan, Contract No. N62467-98-D-0995. July 1998.

CH2M HILL, 2002a. *Evaluation of Site Conditions based on Results of Soil and Groundwater Sampling, Operable Unit 13 – Site 8, Revision 01*. October 2002.

CH2M HILL, 2002b. *Evaluation of Site Conditions based on Results of Soil and Groundwater Sampling, Operable Unit 13 – Site 24, Revision 01*. October 2002.

Ensafe 2002, *Focused Feasibility Study Report, OU 13, Sites 8 and 24, Naval Air Station, Pensacola, Florida*. May 2000.

Florida Department of Environmental Protection, *Use of the 95 Percent Upper Confidence Level (UCL) in Developing Exposure Point Concentrations of Contaminants in Soil*. May 11, 1999.

Naval Energy and Environmental Support Activity. *Initial Assessment Study of Naval Air Station Pensacola, Pensacola, Florida*. (NEESA 13-015). 1983.

U.S. Environmental Protection Agency (EPA) Region IV Environmental Investigations *Standard Operating Procedures and Quality Assurance Manual (SOPQAM)*. 2001.

Appendix A

Soil Analytical Results (April 2004)

Soil Confirmation Analytical Results

INTRODUCTION:

CTO Number: 85
Project Name: NAS Pensacola
Area: Soil Delineation
Project Number: 271578
Laboratory: Mitkem Corporation
Laboratory Package No.: C0249
Matrix: Solid

On April 23, 2004, Environmental Data Professional, LLC (eDATApro) received one data package containing seven field samples. The samples were validated utilizing an CCI-approved checklist based on the Department of Defense Quality System Manual as part of the DOD QSM – Navy Installation Restoration Chemical Data Quality Manual (IRCDQM) and the project specific Scope of Work.

The following samples were reviewed:

Sample ID	Lab ID	Parent Sample ID	Collection Date/Time	Analyses
085-08-152-S-0-1	C0249-01A		3/24/2004 09:49	[1][2]
085-08-152-S-5-7	C0249-02A		3/24/2004 10:20	[1][2]
085-08-153-S-0-1	C0249-03A		3/24/2004 9:45	[1][2]
085-08-153-S-5-7	C0249-04A		3/24/2004 10:10	[1][2]
085-08-154-S-0-1	C0249-05A		3/24/2004 10:00	[1][2]
085-08-154-S-5-7	C0249-06A		3/24/2004 10:30	[1][2]
085-08-155-S-5-7	C0249-07A	085-08-154-S-5-7	3/24/2004 00:00	[1][2]

Analyses Performed Codes:

- [1] – SW8081A – Dieldrin Only
[2] – SPLP/SW8081A – Dieldrin Only

DATA VALIDATION FINDINGS SUMMARY

I. **General Package:**

Please note that project specific reporting limits were not submitted with the validation package and accordingly, these items could not be evaluated during validation.

II. **Organic Analyses:**

- **SW8081A (Total, Dieldrin only)**

The sample 085-08-153-S-5-7 reported the surrogate Decachlorobiphenyl outside of acceptance criteria for both columns (high). Since no detectable target analytes were reported for this sample, no qualification was necessary.

The percent difference between the two columns for the reported result for sample 085-08-154-S-0-1 exceeded acceptance criteria. The laboratory correctly qualified this result with a "P". Accordingly, a data validation qualifier was added to this result of "J".

- **SPLP/SW8081A (Dieldrin only)**

The percent difference between the two columns for the reported result for sample 085-08-153-S-0-1 exceeded acceptance criteria. The laboratory correctly qualified this result with a "P". Accordingly, a data validation qualifier was added to this result of "J".

TABLE 1-1

ACRONYMS AND ABBREVIATIONS

%R – Percent Recovery

%D – Percent Difference

EDD – Electronic Data Deliverable

LCS – Laboratory Control Sample

LCSD – Laboratory Control Sample Duplicate

MS – Matrix Spike

MSD – Matrix Spike Duplicate

QC – Quality Control

TABLE 1-2

DATA QUALIFIER REFERENCE

Qualifier	Organics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.

TABLE 1-3
QUALIFICATION CODE REFERENCE

Code	Organics
P	Confirmation analysis performance exceeded 40%.

TABLE 1-4

SUMMARY OF QUALIFIED DATA

<u>Target Compound</u>	<u>Sample(s) Affected</u>	<u>Qualifier</u>	Qualification Code or Reason for Qualification
Dieldrin, Total	085-08-154-S-0-1	J	P-Confirmation analysis performance exceeded 40%
Dieldrin, SPLP	055-08-153-S-0-1	J	P-Confirmation analysis performance exceeded 40%

INTRODUCTION:

CTO Number: 85
 Project Name: NAS Pensacola
 Area: Soil Delineation
 Project Number: 271578
 Laboratory: Mitkem Corporation
 Laboratory Package No.: C0280
 Matrix: Solid/Water

On April 23, 2004, Environmental Data Professional, LLC (eDATApro) received one data package containing five field samples and one equipment blank. The samples were validated utilizing an CCI-approved checklist based on the Department of Defense Quality System Manual as part of the DOD QSM – Navy Installation Restoration Chemical Data Quality Manual (IRCDQM) and the project specific Scope of Work.

The following samples were reviewed:

Sample ID	Lab ID	Parent Sample ID	Collection Date/Time	Analyses
085-08-PreEB-W-11	C0280-08A		4/01/2004 08:00	[1]
085-08-156-S-0-1	C0280-09A		4/01/2004 08:05	[1]
085-08-158-S-0-1	C0280-11A, C0280-11B		4/01/2004 08:40	[1][2]
085-08-159-S-0-1	C0280-12A		4/01/2004 09:00	[1]
085-08-160-S-0-1	C0280-13A		4/01/2004 09:15	[1]
085-08-162-S-0-1	C0280-15A	085-08-156-S-0-1	4/01/2004	[1]

Analyses Performed Codes:

- [1] – SW8081A – Dieldrin Only
- [2] – SPLP/SW8081A – Dieldrin Only

DATA VALIDATION FINDINGS SUMMARY

I. General Package:

Please note that project specific reporting limits were not submitted with the validation package and accordingly, these items could not be evaluated during validation.

The analyses requested on the COC did not match the data transmittal nor the data package. The COC and data transmittal requested Dieldrin, total only for the following samples:

085-08PreEB-W-11
085-08-156-S-0-1
085-08-158-S-0-1
085-08-162-S-0-1

The data package contained the results for the following samples and as per Melissa Osborne (CH2MHILL), validation was to be performed on all samples submitted with the package.

085-08PreEB-W-11 - Total Dieldrin
085-08-156-S-0-1 - Total Dieldrin
085-08-158-S-0-1 - Total and SPLP Dieldrin
085-08-162-S-0-1 - Total Dieldrin
085-08-159-S-0-1 - Total Dieldrin
085-08-160-S-0-1 - Total Dieldrin

II. Organic Analyses:

- **SW8081A (Total, Dieldrin only)**

The matrix spike and matrix spike duplicate for sample 085-08-056-S-0-1 exhibited recovery above acceptance criteria. Since the parent sample was reported as non-detect, no qualification was necessary.

The surrogate Decachlorobiphenyl was reported as outside of acceptance criteria (low) on both columns for the sample 085-08PreED-W-11. The results were accordingly qualified and coded.

The CCV samples and PEM samples associated with part A of this data package noted criteria failures for the front column. The laboratory narrative notes that Dieldrin results were quantified using this column due to co-eluting interference on the second column. Due to the nature of the reported chromatograms, it was not possible to confirm this co-elution problem. Both columns reported the same positive hit and non-detects for Dieldrin. Accordingly, neither qualifications nor codes were added to these analyses.

- **SPLP/SW8081A (Dieldrin only)** – No qualifications were necessary.

TABLE 1-1

ACRONYMS AND ABBREVIATIONS

%R – Percent Recovery

%D – Percent Difference

EDD – Electronic Data Deliverable

LCS – Laboratory Control Sample

LCSD – Laboratory Control Sample Duplicate

MS – Matrix Spike

MSD – Matrix Spike Duplicate

QC – Quality Control

TABLE 1-2
DATA QUALIFIER REFERENCE

Qualifier	Organics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit
J	The analyte was positively identified: the associated numerical value is the approximate concentration on the analyte in the sample.

TABLE 1-3
QUALIFICATION CODE REFERENCE

Code	Organics
S	Surrogate recovery was outside QC limits

TABLE 1-4

SUMMARY OF QUALIFIED DATA

<u>Target Compound</u>	<u>Sample(s) Affected</u>	<u>Qualifier</u>	Qualification Code or Reason for Qualification
Dieldrin, Total	085-08PreEB-W-11	UJ	S-Surrogate recovery was outside QC limits

Appendix I
Form 1 Data (Qualified)

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

152-S-0-1

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0249

Matrix: (soil/water) SOIL

Lab Sample ID: C0249-01A

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: E3E4360F

% Moisture: 9 decanted: (Y/N) N

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 03/25/04

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 03/26/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Sulfur Cleanup: (Y/N) Y

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

60-57-1-----Dieldrin

3.6 U

01 02

4

01 - RevQual

02 - Qual Code

ml

FORM I PEST

0007

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

152-S-5-7

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0249

Matrix: (soil/water) SOIL

Lab Sample ID: C0249-02A

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: E3E4361F

% Moisture: 5 decanted: (Y/N) N

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 03/25/04

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 03/26/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Sulfur Cleanup: (Y/N) Y

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

60-57-1-----Dieldrin	3.5	U
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01 02
h

01-RevQual
02-QualCode

mg

FORM I PEST

0008

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

153-S-0-1

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0249

Matrix: (soil/water) SOIL

Lab Sample ID: C0249-03A

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: E3E4362F

% Moisture: 9 decanted: (Y/N) N

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 03/25/04

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 03/26/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
60-57-1-----	Dieldrin	50	

01 02

01-RevQual

02-Qual Code

ml

FORM I PEST

0009

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

153-S-5-7

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0249

Matrix: (soil/water) SOIL

Lab Sample ID: C0249-04A

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: E3E4363F

% Moisture: 7 decanted: (Y/N) N

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 03/25/04

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 03/26/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
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60-57-1-----Dieldrin	3.6	U
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01 02
4

01-RevQual
02-Qual Code

ms

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

154-S-0-1

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0249

Matrix: (soil/water) SOIL

Lab Sample ID: C0249-05A

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: E3E4364F

% Moisture: 12 decanted: (Y/N) N

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 03/25/04

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 03/26/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/KG	
60-57-1-----	Diieldrin	5.4	P	

01 02
J P

01 - Rev Qual
02 - Qual code

my

FORM I PEST

0011

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

154-S-5-7

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0249

Matrix: (soil/water) SOIL

Lab Sample ID: C0249-06A

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: E3E4365F

% Moisture: 5 decanted: (Y/N) N

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 03/25/04

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 03/26/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: ____

Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
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60-57-1-----Dieldrin			
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3.5	U
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01 02
u

01-RevQual
02-Qual Code

ml

FORM I PEST

0012

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

155-S-5-7

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0249

Matrix: (soil/water) SOIL

Lab Sample ID: C0249-07A

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: E3E4366F

% Moisture: 8 decanted: (Y/N) N

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 03/25/04

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 03/26/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Sulfur Cleanup: (Y/N) Y

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

60-57-1-----Dieldrin	3.6	U
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01 02
u

01 - RevQual
02 - Qual Code

ml

FORM I PEST

0013

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

152-S-0-1

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0249

Matrix: (soil/water) WATER

Lab Sample ID: C0249-01A

Sample wt/vol: 300.0 (g/mL) ML

Lab File ID: E3E6468F

% Moisture: _____ decanted: (Y/N) _____

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SEPF

Date Extracted: 03/26/04

Concentrated Extract Volume: 2000 (uL)

Date Analyzed: 03/31/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) Y

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

01 02

60-57-1-----Dieldrin

0.067

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01-Rev Qusl
02-Qual Code

ml

FORM I PEST

0017

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

152-S-5-7

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0249

Matrix: (soil/water) WATER

Lab Sample ID: C0249-02A

Sample wt/vol: 300.0 (g/mL) ML

Lab File ID: E3E6469F

% Moisture: _____ decanted: (Y/N) _____

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SEPF

Date Extracted: 03/26/04

Concentrated Extract Volume: 2000 (uL)

Date Analyzed: 03/31/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) Y

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

60-57-1-----Dieldrin	0.067	U
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01 02
u

01 - Rev Qual
02 - Qual Code

ml

FORM I PEST

0018

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

153-S-0-1

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0249

Matrix: (soil/water) WATER

Lab Sample ID: C0249-03A

Sample wt/vol: 300.0 (g/mL) ML

Lab File ID: E3E6470F

% Moisture: _____ decanted: (Y/N) _____

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SEPF

Date Extracted: 03/26/04

Concentrated Extract Volume: 2000 (uL)

Date Analyzed: 03/31/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: _____

Sulfur Cleanup: (Y/N) Y

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

60-57-1-----Dieldrin	0.071	P
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J P

01-Rev Qual
02-Qual Code

ml

FORM I PEST

0019

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

153-S-5-7

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0249

Matrix: (soil/water) WATER

Lab Sample ID: C0249-04A

Sample wt/vol: 300.0 (g/mL) ML

Lab File ID: E3E6473F

% Moisture: _____ decanted: (Y/N) _____

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SEPF

Date Extracted: 03/26/04

Concentrated Extract Volume: 2000 (uL)

Date Analyzed: 03/31/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) Y

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

01 02

60-57-1-----Dieldrin	0.067	U
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01 - RevQual
02 - Qual Code

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FORM I PEST

0022

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

154-S-0-1

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0249

Matrix: (soil/water) WATER

Lab Sample ID: C0249-05A

Sample wt/vol: 300.0 (g/mL) ML

Lab File ID: E3E6474F

% Moisture: _____ decanted: (Y/N) _____

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SEPF

Date Extracted: 03/26/04

Concentrated Extract Volume: 2000 (uL)

Date Analyzed: 03/31/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) Y

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

60-57-1-----Dieldrin	0.067	U
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01 02
u

01 - Rev Qual
02 - Qual Code

ml

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

154-S-5-7

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0249

Matrix: (soil/water) WATER

Lab Sample ID: C0249-06A

Sample wt/vol: 300.0 (g/mL) ML

Lab File ID: E3E6475F

% Moisture: _____ decanted: (Y/N) _____

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SEPF

Date Extracted: 03/26/04

Concentrated Extract Volume: 2000 (uL)

Date Analyzed: 04/01/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: _____

Sulfur Cleanup: (Y/N) Y

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

60-57-1-----Dieldrin	0.067	U
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01 02

u

01-Rev Qual
02-Qual Code

ml

FORM I PEST

0024

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

155-S-5-7

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0249

Matrix: (soil/water) WATER

Lab Sample ID: C0249-07A

Sample wt/vol: 300.0 (g/mL) ML

Lab File ID: E3E6480F

% Moisture: _____ decanted: (Y/N) _____

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SEPF

Date Extracted: 03/26/04

Concentrated Extract Volume: 2000 (uL)

Date Analyzed: 04/01/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) Y

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

01 02

60-57-1-----Dieldrin	0.067	U	u
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01-RevQual
02-QualCode

ml



115 Perimeter Center Place, Suite 700
Atlanta, GA 30349-1278
Tel No: (770) 804-9182
Fax No: (770) 804-9282

CHAIN-OF-CUSTODY RECORD

COC NUMBER:

271578-040324-01

PROJECT NAME:		PROJECT NUMBER:		LAB NAME AND CONTACT:		FAX AND MAIL; COC Reports, Preliminary Data, & EDD TO: REC		RECIPIENT 1 (Address, Tel No., and Fax No.):	
NAS Pensacola		271578		MITKEN Corp., 175 Metro Ctr. Blvd Warwick, RI, 02886-1755		Amy Twitty, CH2M Hill, Inc.		1766 Sea Lark Lane, Navarre, FL 32566 850-939-8300 (phone), 850-939-0035 (fax)	
PROJECT PHASE/SITE/TASK:		CTO OR DO NUMBER:		LAB PO NUMBER:		FAX AND MAIL Preliminary reports TO: RECIPIENT 2 (Name and		RECIPIENT 2 (Address, Tel No., and Fax No.):	
Site 8		CTO-0085		PO # 800362		Bonnie Hogue, CH2M Hill, Constructors, Inc.		115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9095 Fax=770.604.9181	
PROJECT CONTACT:		PROJECT TEL NO AND FAX NO:		LAB TEL NO AND FAX NO:		FAX AND MAIL; COC Reports, Preliminary Data, & EDD TO: REC		RECIPIENT 3 (Address, Tel No., and Fax No.):	
Amy Twitty		Phone=850.939.8300 Fax=850.939.0035		(401) 732-3400		Melissa Aycock, CH2M Hill, Constructors, Inc.		115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9095 Fax=770.604.9181	

ANALYSES REQUIRED (Include Method Numbers)

ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX (see codes on SOP)	DATE COLLECTED	TIME COLLECTED	DATA PKG LEVEL (see codes on SOP)	TAT (calendar days)	TCLP Volatiles by 1311/ 81608	TCLP Semi-Volatiles by 1311/8270C	TCLP Metals by 1311/6010B/7470A	TCLP Pesticides by 1311/8081A	TCLP Herbicides by 1311/8151A	PCB by 8032	Corrosivity by 9045C	Ignitability by 1010/1020	Total Dieldrin by 1311/8081 & SPLP Dieldrin by 1312/8081	Type	COMMENTS/ SCREENING READINGS	LAB ID (for lab's use)
1	01 085-08-150-S-0-9	2' east of 08S013	S	03/24/04	1230	B	7	3 ea. - 8 oz. Glass & 1 ea. - 16 oz. Glass									N		
2	02 085-08-151-S-0-9	2' east of 08S03	S	03/24/04	1055	B	7	3 ea. - 8 oz. Glass & 1 ea. - 16 oz. Glass									N		
3	01 085-08-152-S-0-1	5' west of 08S110 0-1' bls	S	03/24/04	0949	C	2									2 ea. - 8 oz. Glass	N		
4	02 085-08-152-S-5-7	5' west of 08S110 5'-7' bls	S	03/24/04	1020	C	2									2 ea. - 8 oz. Glass	N		
5	03 085-08-153-S-0-1	10' north of 08S110 0-1' bls	S	03/24/04	0945	C	2									2 ea. - 8 oz. Glass	N		
6	04 085-08-153-S-5-7	10' north of 08S110 5'-7' bls	S	03/24/04	1010	C	2									2 ea. - 8 oz. Glass	N		
7	05 085-08-154-S-0-1	10' east of 08S110 0-1' bls	S	03/24/04	1000	C	2									2 ea. - 8 oz. Glass	N		
8	06 085-08-154-S-5-7	10' east of 08S110 5'-7' bls	S	03/24/04	1030	C	2									2 ea. - 8 oz. Glass	N		
9	07 085-08-155-S-5-7	8' south of 08S110 5'-7' bls	S	03/24/04	—	C	2									2 ea. - 8 oz. Glass	FD		
10	03 085-08PreEB-W-10	PRE-EQUIP. RINSATE	W	03/24/04	0917	C	7									2 ea. - 1 lt. amber	EB		

SAMPLER(S) AND COMPANY: (please print)			COURIER AND SHIPPING NUMBER:			SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):							
Scott Dunbar, CH2M Hill Constructors, Inc.			Fed-Ex, Airbill # 825368985346			2°C							
RELINQUISHED BY			DATE		TIME		RECEIVED BY			DATE		TIME	
Printed Name and Signature:							Printed Name and Signature:						
Scott Dunbar			3-24-04		1600		J. Davis			3-25-04		0900	
Printed Name and Signature:							Printed Name and Signature:						
Printed Name and Signature:							Printed Name and Signature:						
Printed Name and Signature:							Printed Name and Signature:						

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PREEB

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0280

Matrix: (soil/water) WATER

Lab Sample ID: C0280-08A

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: E3E6544F

% Moisture: _____ decanted: (Y/N) _____

Date Received: 04/02/04

Extraction: (SepF/Cont/Sonc) SEPF

Date Extracted: 04/02/04

Concentrated Extract Volume: 10000 (uL)

Date Analyzed: 04/03/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: _____

Sulfur Cleanup: (Y/N) Y

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

60-57-1-----Dieldrin	0.10	U
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01 02
5 5

01 - RevQual
02 - Qual-Code

mg

FORM I PEST

0025

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

156-S-0-1

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0280

Matrix: (soil/water) SOIL

Lab Sample ID: C0280-09A

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: E3E6557F

% Moisture: 7 decanted: (Y/N) N

Date Received: 04/02/04

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 04/02/04

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 04/04/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Sulfur Cleanup: (Y/N) Y

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

60-57-1-----Dieldrin	3.5	U
----------------------	-----	---

01 02

u

01 - Rev Qual

02 - Qual Code

ms

FORM I PEST

0020

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

158-S-0-1

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0280

Matrix: (soil/water) SOIL

Lab Sample ID: C0280-11A

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: E3E6560F

% Moisture: 6 decanted: (Y/N) N

Date Received: 04/02/04

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 04/02/04

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 04/04/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
60-57-1-----	Dieldrin	25	

01 02

01 - Rev Qual
02 - Qual Code

[Handwritten signature]

FORM I PEST

0023

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

158-S-0-1

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0280

Matrix: (soil/water) WATER

Lab Sample ID: C0280-11B

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: E3E6612F

% Moisture: _____ decanted: (Y/N) _____

Date Received: 04/02/04

Extraction: (SepF/Cont/Sonc) SEPF

Date Extracted: 04/06/04

Concentrated Extract Volume: 10000 (uL)

Date Analyzed: 04/06/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) Y

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

60-57-1-----Dieldrin	0.10	U
----------------------	------	---

01 02
u

01-RevQual
02-Qual Code

ml

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

159-S-0-1

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0280

Matrix: (soil/water) SOIL

Lab Sample ID: C0280-12A

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: E3E6630F

% Moisture: 6 decanted: (Y/N) N

Date Received: 04/02/04

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 04/06/04

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 04/07/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Sulfur Cleanup: (Y/N) Y

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

01 02

60-57-1-----Dieldrin	5.0	
----------------------	-----	--

01 - Rev Qual
02 - Qual Code

MD

FORM I PEST

0014

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

160-S-0-1

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0280

Matrix: (soil/water) SOIL

Lab Sample ID: C0280-13A

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: E3E6659F

% Moisture: 5 decanted: (Y/N) N

Date Received: 04/02/04

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 04/08/04

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 04/10/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Sulfur Cleanup: (Y/N) Y

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

60-57-1-----Dieldrin	3.4	U
----------------------	-----	---

01 02
4

01 - RevQual
02 - Qual Code

ml

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

162-S-0-1

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0280

Matrix: (soil/water) SOIL

Lab Sample ID: C0280-15A

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: E3E6561F

% Moisture: 7 decanted: (Y/N) N

Date Received: 04/02/04

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 04/02/04

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 04/04/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: ____

Sulfur Cleanup: (Y/N) Y

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

60-57-1-----Dieldrin	3.5	U
----------------------	-----	---

01 02

u

01-Rev Qual
02-Qual Code

m

Appendix II
Chain of Custody

CHAIN-OF-CUSTODY RECORD

COC N:

271578-040401-02

1 PROJECT NAME: NAS Pensacola		2 PROJECT NUMBER: 271578		3 LAB NAME AND CONTACT: MITKEN Corp., 175 Metro Ctr. Blvd Warwick, Ri., 02886-1755		11 FAX AND MAIL; COC Reports, Preliminary Data, & EDD TO: R Amy Twitty, CH2M Hill, Inc.		14 RECIPIENT 1 (Address, Tel No., and Fax No.): 1766 Sea Lark Lane, Navarre, FL 32566 850-939-8300 (phone), 850-939-0035 (fax)	
5 PROJECT PHASE/SITE/TASK: Site 8		6 CTO OR DO NUMBER: CTO-0085		9 LAB PO NUMBER: PO # 800362		13 FAX AND MAIL Preliminary reports TO: RECIPIENT 2 (Name and Address) Bonnie Hogue, CH2M Hill, Constructors, Inc.		15 RECIPIENT 2 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9095 Fax=770.604.9181	
4 PROJECT CONTACT: Amy Twitty		7 PROJECT TEL NO AND FAX NO: Phone=850.939.8300 Fax=850.939.0035		10 LAB TEL NO AND FAX NO: (401) 732-3400		11 FAX AND MAIL; COC Reports, Preliminary Data, & EDD TO: R Melissa Osborne, CH2M Hill, Constructors, Inc.		16 RECIPIENT 3 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9095 Fax=770.604.9181	

25 ANALYSES REQUIRED (Include Method Numbers)

17 ITEM	18 SAMPLE IDENTIFIER	19 SAMPLE DESCRIPTION/LOCATION	20 MATRIX (see codes on SOP)	21 DATE COLLECTED	22 TIME COLLECTED	23 DATA PKG LEVEL (see codes on SOP)	24 TAT (calendar days)	Total Dilution by 8081	SPLP Dilution by 1312/8081							Type	27 COMMENTS/ SCREENING READINGS	28 LAB ID (for lab's use)
1	085-08-156-S-5-7 01	20' East of 08S110 5-7" bls	S	04/01/04	0810	C	2	Hold	Hold							N	2 ea. 8 oz. glass	
2	085-08-157-S-5-7 02	30' East of 08S110 5-7" bls	S	04/01/04	—	C	2	Hold	Hold							N	2 ea. 8 oz. glass	JP 4/2/04
3	085-08-158-S-5-7 03	20' North of 08S110 5-7' bls	S	04/01/04	0845	C	2	Hold	Hold							N	2 ea. 8 oz. glass	
4	085-08-159-S-5-7 04	25' North of 08S110 5-7' bls	S	04/01/04	0905	C	2	Hold	Hold							N	2 ea. 8 oz. glass	
5	085-08-160-S-5-7 05	30' North of 08S110 5-7' bls	S	04/01/04	0920	C	2	Hold	Hold							N	2 ea. 8 oz. glass	
6	085-08-161-S-5-7 06	10' West of 08S110 5-7' bls	S	04/01/04	0945	C	2	Hold	Hold							N	2 ea. 8 oz. glass	
7	085-08-162-S-5-7 07	Field Dup	S	04/01/04	—	C	2	Hold	Hold							FD	2 ea. 8 oz. glass	
8																		
9																		
10																		

29 SAMPLER(S) AND COMPANY: (please print) Scott Dunbar, CH2M Hill Constructors, Inc.		30 COURIER AND SHIPPING NUMBER: Fed-Ex, Airbill #		31 SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use): 30	
32 RELINQUISHED BY Printed Name and Signature: Phyllis Zerangue: <i>[Signature]</i>		DATE 04/01/04	TIME 1300	33 RECEIVED BY Printed Name and Signature: John Davis: <i>[Signature]</i>	
Printed Name and Signature:				DATE 4-2-04	
Printed Name and Signature:				TIME 0900	
Printed Name and Signature:					
Printed Name and Signature:					

CHAIN-OF-CUSTODY RECORD

COC#

271578-040401-01

1 PROJECT NAME: NAS Pensacola		2 PROJECT NUMBER: 271578		3 LAB NAME AND CONTACT: MITKEN Corp., 175 Metro Ctr. Blvd Warwick, Ri., 02886-1755		11 FAX AND MAIL; COC Reports, Preliminary Data, & EDD TO: R Amy Twitty, CH2M Hill, Inc.		14 RECIPIENT 1 (Address, Tel No., and Fax No.): 1766 Sea Lark Lane, Navarre, FL 32566 850-939-8300 (phone), 850-939-0035 (fax)	
5 PROJECT PHASE/SITE/TASK: Site 8		6 CTO OR DO NUMBER: CTO-0085		9 LAB PO NUMBER: PO # 800362		12 FAX AND MAIL Preliminary reports TO: RECIPIENT 2 (Name as Bonnie Hogue, CH2M Hill, Constructors, Inc.		15 RECIPIENT 2 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9095 Fax=770.604.9181	
4 PROJECT CONTACT: Amy Twitty		7 PROJECT TEL NO AND FAX NO: Phone=850.939.8300 Fax=850.939.0035		10 LAB TEL NO AND FAX NO: (401) 732-3400		11 FAX AND MAIL; COC Reports, Preliminary Data, & EDD TO: R Melissa Osborne, CH2M Hill, Constructors, Inc.		16 RECIPIENT 3 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9095 Fax=770.604.9181	

25 ANALYSES REQUIRED (Include Method Numbers)

17 ITEM	18 SAMPLE IDENTIFIER	19 SAMPLE DESCRIPTION/LOCATION	20 MATRIX (see codes on SOP)	21 DATE COLLECTED	22 TIME COLLECTED	23 DATA PKG LEVEL (see codes on SOP)	24 TAT (calendar days)	Total Dieldrin by 8081	SPL Dieldrin by 1312/8081							Type	27 COMMENTS/ SCREENING READINGS	28 LAB ID (for lab's use)
1	085-08PreEB-W-11 08	Pre-Equip. Rinsate	W	04/01/04	0800	C	2	1	N/A							EB	2 ea. 1 liter amber glass	
2	085-08-156-S-0-1 09	20' East of 08S110 0-1' bls	S	04/01/04	0805	C	2	1	Hold							N	2 ea. 8 oz. glass	
3	085-08-157-S-0-1 10	30' East of 08S110 0-1' bls	S	04/01/04	0815	C	2	Hold	Hold							N	2 ea. 8 oz. glass	
4	085-08-158-S-0-1 11	20' North of 08S110 0-1' bls	S	04/01/04	0840	C	2	1	Hold							N	2 ea. 8 oz. glass	
5	085-08-159-S-0-1 12	25' North of 08S110 0-1' bls	S	04/01/04	0900	C	2	Hold	Hold							N	2 ea. 8 oz. glass	
6	085-08-160-S-0-1 13	30' North of 08S110 0-1' bls	S	04/01/04	0915	C	2	Hold	Hold							N	2 ea. 8 oz. glass	
7	085-08-161-S-0-1 14	10' West of 08S110 0-1' bls	S	04/01/04	0930	C	2	Hold	Hold							N	2 ea. 8 oz. glass	
8	085-08-162-S-0-1 15	Field Dup	S	04/01/04	—	C	2	1	Hold							FD	2 ea. 8 oz. glass	
9																		
10																		

29 SAMPLER(S) AND COMPANY: (please print) Scott Dunbar, CH2M Hill Constructors, Inc.			30 COURIER AND SHIPPING NUMBER: Fed-Ex, Airbill #			31 SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use): 30		
22 RELINQUISHED BY		DATE	TIME	23 RECEIVED BY		DATE	TIME	
Printed Name and Signature: Phillis Teranque		04/01/04	1300	Printed Name and Signature: JOHN DAVIS J. Davis		4-2-04	0900	
Printed Name and Signature:				Printed Name and Signature:				
Printed Name and Signature:				Printed Name and Signature:				

CTO85

Data Summary Table

NAS Pensacola-Site 8 Waste Disposal

	Station ID	2' east of 08S013	2' east of 08S03
	Sample ID	085-08-150-S-0-9	085-08-151-S-0-9
	Sample Date	3/24/2004	3/24/2004
Parameter	Unit		
SW1010			
ignitability	DEG F	200 U	200 U
SW6010B			
Arsenic	UG/L	30 U	30 U
Barium	UG/L	2100 B	308 B
Cadmium	UG/L	124	93.6
Chromium, total	UG/L	6.6 B	12.4 B
Lead	UG/L	2270	349
Selenium	UG/L	90 U	90 U
Silver	UG/L	28.2 B	20 U
SW7470A			
Mercury	UG/L	1 U	1 U
SW8081A			
endrin	UG/L	0.33 U	0.33 U
gamma bhc (lindane)	UG/L	0.17 U	0.17 U
heptachlor	UG/L	0.17 U	0.17 U
heptachlor epoxide	UG/L	0.17 U	0.17 U
methoxychlor	UG/L	1.7 U	1.7 U
toxaphene	UG/L	17 U	17 U
Trans-Chlordane	UG/L	8.3 U	8.3 U
SW8151A			
2,4-d (dichlorophenoxyacetic acid)	UG/L	3.3 U	3.3 U
silvex (2,4,5-tp)	UG/L	0.33 U	0.33 U
SW8260B			
1,1-Dichloroethene	UG/L	5 U	5 U
1,2-Dichloroethane	UG/L	5 U	5 U
Benzene	UG/L	5 U	5 U
Carbon tetrachloride	UG/L	5 U	5 U
Chlorobenzene	UG/L	5 U	5 U
Chloroform	UG/L	5 U	5 U
Methyl ethyl ketone (2-butanone)	UG/L	5 U	5 U
Tetrachloroethene (PCE)	UG/L	5 U	5 U
Trichloroethene (TCE)	UG/L	5 U	5 U
Vinyl chloride	UG/L	5 U	5 U
SW8270C			
1,4-Dichlorobenzene	UG/L	33 U	33 U
2,4,5-Trichlorophenol	UG/L	67 U	67 U
2,4,6-Trichlorophenol	UG/L	33 U	33 U
2,4-Dinitrotoluene	UG/L	33 U	33 U
2-Methylphenol (o-Cresol)	UG/L	33 U	33 U
4-Methylphenol (p-Cresol)	UG/L	33 UJ	33 UJ
Hexachlorobenzene	UG/L	33 U	33 U
Hexachlorobutadiene	UG/L	33 U	33 U
Hexachloroethane	UG/L	33 U	33 U
Nitrobenzene	UG/L	33 U	33 U
Pentachlorophenol	UG/L	67 U	67 U
pyridine	UG/L	33 U	33 U
SW9045			
ph	S.U.	7.2	5.8

Notes:

Values Bold and Shaded are Hits.

U- Analyte analyzed, but not detected.

J- Value is estimated.

B- Detected in method and/or calibration blank.

Waste Characterization Analytical Results

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

150-S-0-9

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0247

Matrix: (soil/water) WATER

Lab Sample ID: C0247-01A

Sample wt/vol: 5.000 (g/mL) ML

Lab File ID: V1G0747

Level: (low/med) LOW

Date Received: 03/25/04

% Moisture: not dec. _____

Date Analyzed: 04/02/04

GC Column: DB-624 ID: 0.25 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

75-01-4-----	Vinyl Chloride	5	U
75-35-4-----	1,1-Dichloroethene	5	U
78-93-3-----	2-Butanone	5	U
67-66-3-----	Chloroform	5	U
56-23-5-----	Carbon Tetrachloride	5	U
107-06-2-----	1,2-Dichloroethane	5	U
71-43-2-----	Benzene	5	U
79-01-6-----	Trichloroethene	5	U
127-18-4-----	Tetrachloroethene	5	U
108-90-7-----	Chlorobenzene	5	U

C.R

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

151-S-0-9

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0247

Matrix: (soil/water) WATER

Lab Sample ID: C0247-02A

Sample wt/vol: 5.000 (g/mL) ML

Lab File ID: V1G0748

Level: (low/med) LOW

Date Received: 03/25/04

% Moisture: not dec. _____

Date Analyzed: 04/02/04

GC Column: DB-624 ID: 0.25 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

75-01-4-----	Vinyl Chloride	5	U
75-35-4-----	1,1-Dichloroethene	5	U
78-93-3-----	2-Butanone	5	U
67-66-3-----	Chloroform	5	U
56-23-5-----	Carbon Tetrachloride	5	U
107-06-2-----	1,2-Dichloroethane	5	U
71-43-2-----	Benzene	5	U
79-01-6-----	Trichloroethene	5	U
127-18-4-----	Tetrachloroethene	5	U
108-90-7-----	Chlorobenzene	5	U

0.1

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

150-S-0-9

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0247

Matrix: (soil/water) WATER

Lab Sample ID: C0247-01A

Sample wt/vol: 300.0 (g/mL) ML

Lab File ID: S2D9446

Level: (low/med) LOW

Date Received: 03/25/04

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 03/26/04

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 03/27/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: _____

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

106-46-7-----	1,4-Dichlorobenzene	33	U
95-48-7-----	2-Methylphenol	33	U
106-44-5-----	4-Methylphenol	33	U
67-72-1-----	Hexachloroethane	33	U
98-95-3-----	Nitrobenzene	33	U
87-68-3-----	Hexachlorobutadiene	33	U
88-06-2-----	2,4,6-Trichlorophenol	33	U
95-95-4-----	2,4,5-Trichlorophenol	67	U
121-14-2-----	2,4-Dinitrotoluene	33	U
118-74-1-----	Hexachlorobenzene	33	U
87-86-5-----	Pentachlorophenol	67	U
110-86-1-----	Pyridine	33	U

C.L

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

151-S-0-9

Lab Name: MITKEM CORPORATION Contract:
Lab Code: MITKEM Case No.: SAS No.: SDG No.: C0247
Matrix: (soil/water) WATER Lab Sample ID: C0247-02A
Sample wt/vol: 300.0 (g/mL) ML Lab File ID: S2D9447
Level: (low/med) LOW Date Received: 03/25/04
% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 03/26/04
Concentrated Extract Volume: 1000 (uL) Date Analyzed: 03/27/04
Injection Volume: 1.0 (uL) Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/L	
106-46-7-----	1,4-Dichlorobenzene	33	U	C
95-48-7-----	2-Methylphenol	33	U	
106-44-5-----	4-Methylphenol	33	U	
67-72-1-----	Hexachloroethane	33	U	
98-95-3-----	Nitrobenzene	33	U	
87-68-3-----	Hexachlorobutadiene	33	U	
88-06-2-----	2,4,6-Trichlorophenol	33	U	
95-95-4-----	2,4,5-Trichlorophenol	67	U	
121-14-2-----	2,4-Dinitrotoluene	33	U	
118-74-1-----	Hexachlorobenzene	33	U	
87-86-5-----	Pentachlorophenol	67	U	
110-86-1-----	Pyridine	33	U	

C. ✓

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

150-S-0-9

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0247

Matrix: (soil/water) WATER

Lab Sample ID: C0247-01A

Sample wt/vol: 300.0 (g/mL) ML

Lab File ID: E3E4396F

% Moisture: _____ decanted: (Y/N) _____

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SEPF

Date Extracted: 03/26/04

Concentrated Extract Volume: 10000 (uL)

Date Analyzed: 03/27/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: _____

Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9-----	gamma-BHC (Lindane)	0.17	U
76-44-8-----	Heptachlor	0.17	U
1024-57-3-----	Heptachlor epoxide	0.17	U
72-20-8-----	Endrin	0.33	U
72-43-5-----	Methoxychlor	1.7	U
8001-35-2-----	Toxaphene	17	U
12789-03-6-----	Chlordane (technical)	8.3	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

151-S-0-9

Lab Name: MITKEM CORPORATION Contract:
Lab Code: MITKEM Case No.: SAS No.: SDG No.: C0247
Matrix: (soil/water) WATER Lab Sample ID: C0247-02A
Sample wt/vol: 300.0 (g/mL) ML Lab File ID: E3E4397F
% Moisture: _____ decanted: (Y/N) _____ Date Received: 03/25/04
Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 03/26/04
Concentrated Extract Volume: 10000 (uL) Date Analyzed: 03/27/04
Injection Volume: 1.0 (uL) Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

58-89-9-----	gamma-BHC (Lindane) _____	0.17	U
76-44-8-----	Heptachlor _____	0.17	U
1024-57-3-----	Heptachlor epoxide _____	0.17	U
72-20-8-----	Endrin _____	0.33	U
72-43-5-----	Methoxychlor _____	1.7	U
8001-35-2-----	Toxaphene _____	17	U
12789-03-6-----	Chlordane (technical) _____	8.3	U

FORM I PEST

C.R

0036

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PREEB-W-10

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0247

Matrix: (soil/water) WATER

Lab Sample ID: C0247-03A

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: E3E4417F

% Moisture: _____ decanted: (Y/N) _____

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SEPF

Date Extracted: 03/27/04

Concentrated Extract Volume: 10000 (uL)

Date Analyzed: 03/29/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

60-57-1-----Dieldrin	0.10	U
----------------------	------	---

FORM 1
HERB ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

150-S-0-9

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0247

Matrix: (soil/water) WATER

Lab Sample ID: C0247-01A

Sample wt/vol: 300.0 (g/mL) ML

Lab File ID: E4C1879F

% Moisture: _____ decanted: (Y/N) _____

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SEPF

Date Extracted: 03/26/04

Concentrated Extract Volume: 10000 (uL)

Date Analyzed: 03/26/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7-----	2,4-D	3.3	U
93-72-1-----	2,4,5-TP (Silvex)	0.33	U

C.R

FORM I HERB

0043

FORM 1
HERB ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

151-S-0-9

Lab Name: MITKEM CORPORATION

Contract:

Lab Code: MITKEM

Case No.:

SAS No.:

SDG No.: C0247

Matrix: (soil/water) WATER

Lab Sample ID: C0247-02A

Sample wt/vol: 300.0 (g/mL) ML

Lab File ID: E4C1880F

% Moisture: _____ decanted: (Y/N) _____

Date Received: 03/25/04

Extraction: (SepF/Cont/Sonc) SEPF

Date Extracted: 03/26/04

Concentrated Extract Volume: 10000 (uL)

Date Analyzed: 03/26/04

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7-----	2,4-D	3.3	U
93-72-1-----	2,4,5-TP (Silvex)	0.33	U

94-75-7-----2,4-D

93-72-1-----2,4,5-TP (Silvex)

3.3 U

0.33 U

FORM I HERB

C. L

0044

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO

150-S-0-9

Lab Name: Mitkem CorporationContract: N62467-01Lab Code: MITKEM

Case No.

SAS No.:

SDG No.: MC0247Matrix (soil/water): SOILLab Sample ID: C0247-01Level (low/med): MEDDate Received: 03/25/04% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	30	U		P
7440-39-3	Barium	2100	B		P
7440-43-9	Cadmium	124			P
7440-47-3	Chromium	6.6	B		P
7439-92-1	Lead	2270			P
7782-49-2	Selenium	90	U		P
7440-22-4	Silver	28.2	B		P
7439-97-6	Mercury	1.0	U		CV

MB

MB

MB

Comments:
TCLP

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO

151-S-0-9

Lab Name: Mitkem CorporationContract: N62467-01Lab Code: MITKEM

Case No.

SAS No.:

SDG No.: MC0247Matrix (soil/water): SOILLab Sample ID: C0247-02Level (low/med): MEDDate Received: 03/25/04% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	30	U		P
7440-39-3	Barium	308	B		P
7440-43-9	Cadmium	93.6			P
7440-47-3	Chromium	12.4	B		P
7439-92-1	Lead	349			P
7782-49-2	Selenium	90	U		P
7440-22-4	Silver	20	U		P
7439-97-6	Mercury	1.0	U		CV

MB

MB

Comments:

TCLP

Mitkem Corporation

Date: 30-Mar-04

Client: CH2M Hill Constructors, Inc.

Client Sample ID: 150-S-0-9

Lab ID: C0247-01

Project: CTO-85 NAS Pensacola- Site 8

Collection Date: 03/24/04 12:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
FLASHPOINT BY PENSKEY-MARTENS CLOSED-CUP METHOD			SW1010_S				
Ignitability	No flash up to 145		200	°F	1	03/30/2004 15:00	R5949
SOIL AND WASTE PH			SW9045C_S				
pH	7.2		1.0	S.U.	1	03/30/2004 11:00	R5940

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

0022

Mitkem Corporation

Date: 30-Mar-04

Client: CH2M Hill Constructors, Inc.
Client Sample ID: 151-S-0-9
Lab ID: C0247-02

Project: CTO-85 NAS Pensacola- Site 8
Collection Date: 03/24/04 10:55

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
FLASHPOINT BY PENSKEY-MARTENS CLOSED-CUP METHOD			SW1010_S				
Ignitability	No flash up to 135		200	°F	1	03/30/2004 15:00	R5949
SOIL AND WASTE PH			SW9045C_S				
pH	5.8		1.0	S.U.	1	03/30/2004 11:00	R5940

a. R

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Appendix B

Health and Safety Plan

**Health and Safety Plan
Interim Removal Actions at
Operable Unit 13, Site 8
PWC Building 3561
Naval Air Station Pensacola
Pensacola, Florida**

**Contract No. N62467-98-D-0995
Contract Task Order No. 0085**

Revision 00

Submitted to:

**U.S. Naval Facilities
Engineering Command
Southern Division**

Prepared by:



115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA 30346

March 2004

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- 1 Employee Signoff Form
- 2 Project-Specific Chemical Product Hazard Communication Form
- 3 Chemical-Specific Training Form
- 4 Emergency Contacts
- 5 Activity Hazard Analysis Form
- 6 Project Activity Self-Assessment Checklists/Permits
- 7 Incident Reporting Forms
- 8 Material Safety Data Sheets

Acronyms

°F	degrees Fahrenheit
AHA	Activity Hazard Analysis
ALARA	as low as reasonably achievable
APR	air-purifying respirator
ATL	Atlanta
BBLPS	Behavior Based Loss Prevention System
CH2M HIL	CH2M HILL Constructors, Inc.
L	
CNS	central nervous system
COC	Contaminant of Concern
CPR	cardiopulmonary resuscitation
CTO	Contract Task Order
dBA	decibel A-rated
DOT	Department of Transportation
FA	first aid
FID	flame ionization detector
GFCI	ground fault circuit interrupter
HAZCOM	hazard communication
HR	heart rate
HSM	Health and Safety Manager
HSP	Health and Safety Plan
IDLH	immediately dangerous to life and health
IDW	investigation-derived waste
IRF	Incident Report Form
lb	pound
LEL	lower explosive limit
LPO	Loss Prevention Observation
mg/m ³	milligrams per cubic meter
MSDS	Material Safety Data Sheet
mW/cm ²	milliwatt per square centimeter
NAS	Naval Air Station
NDG	nuclear density gauge
NEESA	Naval Energy and Environmental Support Activity
NLI	Near Loss Investigation
NSC	National Safety Council
NTR	Navy Technical Representative
NVR	Navarre, Florida
OSHA	Occupational Safety and Health Administration
PAPR	powered air-purifying respirator
PDF	personal flotation device
PID	photoionization detector
PPE	personal protective equipment

ppm	parts per million
PTSP	Pre-Task Safety Plan
PWC	Public Works Center
RMSF	Rocky Mountain Spotted Fever
SAR	supplied-air respirator
SCBA	self-contained breathing apparatus
SHSS	Site Health and Safety Specialist
SOP	standard of practice
STEL	short-term exposure limit
SZ	support zone
TBD	to be determined
TMCC	truck-mounted crash cushion
TSDF	treatment, storage, and disposal facility

This Health and Safety Plan (HSP) will be kept on the site during field activities and will be reviewed as necessary. The plan will be amended or revised as project activities or conditions change or when supplemental information becomes available. The plan adopts, by reference, the Standards of Practice (SOPs) in the CH2M HILL *Corporate Health and Safety Program, Program and Training Manual*, as appropriate. In addition, this plan adopts procedures in the project Work Plan. The Site Health and Safety Specialist (SHSS) is to be familiar with these SOPs and the contents of this plan. CH2M HILL Constructors Inc.'s (CH2M HILL's) personnel and subcontractors must sign Attachment 1.

1.0 Project Information and Description

Project No: Contract Task Order (CTO) No. 0085 - 271578

Client: Southern Division, U.S. Navy Facilities Engineering Command (NAVFAC)

Project/Site Name: NAS Pensacola, PWC Building 3561

Site Address: NAS Pensacola, Pensacola FL

Navy RAC Project Manager: Amy Twitty/Navarre, Florida (NVR)

CH2M HILL Office: ATL

Date Health And Safety Plan Prepared: August 2002

Date Health And Safety Plan Revised: March 2004

Date(s) of Site Work: March 2004 - March 2005

Site Background and Setting: Site 8 is an approximately 450 by 600 foot area currently occupied by Building 3561, which houses the NAS Pensacola Public Works Center (PWC) Maintenance/Material Department. An extensive asphalt-paved area surrounds Building 3561 to the north, east, and west, covering nearly all land surface. An approximately 20-foot wide concrete apron immediately surrounds the building to the east and west and is covered by an awning. The PWC stores building materials on the paved area west of the building. Miscellaneous office trailers and fences storage, including Building 3678, are north of the building. The paved area east of the building is used for PWC storage and employee parking. Sidewalks and a grassy median are to the south, between Buildings 3560 and 3561. Most of the site is surrounded by a chain-link fence.

Site 8 is the former base rifle range and disposal area. Various solid wastes and dry refuse were reportedly placed in trenches and burned there in the late 1950s and early 1960s. Aerial photographs and maps from the 1950s and 1960s show a rifle range at Building 3561's current location. Earlier aerial photographs show an excavation at the northern end of the rifle range, while later photographs show the excavated area overgrown with vegetation. Most of the excavation noted in the earlier photographs is currently covered by Building 3561 and surrounding paved area, which were covered in the mid 1970s. Facility personnel reported no waste or residue was identified during the building's construction (Naval Energy and Environmental Support Activity [NEESA], 1983). However, cemetery personnel have reported finding buried metal, rubber, and plastic aircraft parts during excavation along Site 24's eastern boundary.

Site 24 (DDT Mixing Area) is immediately north of Building 3561 near the northwest corner of the Barrancas National Cemetery. Nearly three quarter's of the site is now part of the Barrancas National Cemetery and is filled with gravesites. Only the southwestern corner of the site, now covered with grass, is free of graves. A paved road transects the site from east to west which leads to the circular drive surrounding the Columbarium Complex.

The fenced storage area around Building 3678, in Site 24's northern portion has a gravel/crushed shell land surface. The site is generally flat with land elevations between 24 and 26 feet above msl. The Cemetery is anxious to use the remaining free space of Site 24.

From the early 1950s until the early 1960s, Site 24 was used to mix DDT with diesel fuel for mosquito control. DDT, reportedly spilled in the mixing area while being transferred from drums to spray tanks, may have contaminated local soil and groundwater. DDT was aerially applied for at least 10 years to control mosquito outbreaks. In later years, DDT was applied by a fogger machine. On the average, two or three mosquito outbreaks occurred each year during the spring and summer. Following each outbreak, DDT was generally applied during a 1-week period. For each application, 500 gallons of 20 percent DDT solution was mixed with 300 gallons of diesel fuel. The fogger machine used 300 gallons of a 20 percent DDT mixed with 300 gallons of diesel fuel. It is estimated that up to 20 gallons of the 20 percent solution may have been spilled during the approximate 10 years of mixing at the site.

Description of Specific Tasks to be Performed: The scope of work will consist of removal of low level Cadmium and possibly Dieldrin contaminated soil. The definable features of this work will include:

- Site Preparation
- Soil Excavation
- Shoring
- Backfill & Compaction
- Site Restoration

2.0 Tasks to be Performed Under this Plan

(Reference Field Project Start-up Form)

Refer to the Work Plan for detailed task information. Tasks other than those listed below require an approved amendment or revision to this plan before tasks begin. Refer to Section 8.2 for procedures related to “clean” tasks that do not involve hazardous waste operations and emergency response (Hawwoper).

2.1 Hawwoper-Regulated Tasks

- Site Preparation
- Soil Excavation
- Shoring
- Backfill & Compaction
- Site Restoration

2.2 Non-Hawwoper-Regulated Tasks

Under specific circumstances, the training and medical monitoring requirements of federal or state Hawwoper regulations are not applicable. It must be demonstrated that the tasks can be performed without the possibility of exposure in order to use non-Hawwoper-trained personnel. Prior approval from the Health and Safety Manager (HSM) is required before these tasks are conducted on regulated hazardous waste sites.

Tasks	Controls
<ul style="list-style-type: none">• General heavy equipment work (excavation, grading, etc.)	<ul style="list-style-type: none">• Brief on hazards, limits of access, and emergency procedures• Post contaminant areas as appropriate• Sample and monitor as appropriate

2.3 Hazard Analysis

(Refer to Section 3 for hazard controls)

Potential Hazards	Project Activities				
	Site Preparation	Soil Excavation	Shoring	Backfill & Compaction	Site Restoration
Manual Lifting (HS-29)	X	X	X	X	X
Fire Prevention (HS-22)	X				
Electrical Safety (HS-23)	X			X	
Lockout /Tagout (HS-33)					
Ladders & Stairs(HS-25)	X				
Compressed Gas Cylinders (HS-63)			X	X	
Buried Utilities	X	X			
Excavations (HS-32)		X	X	X	
Fall Protection (HS-31)					
Heavy Equipment (HS-27)	X	X		X	X
Confined Space Entry (HS-17)			X		

Potential Hazards	Project Activities				
	Site Preparation	Soil Excavation	Shoring	Backfill & Compaction	Site Restoration
Concrete & Masonry Work (HS-43)					
Cranes and Hoisting (HS-44)			X		
Demolition (HS-45)					
Scaffolding(HS-73)					
Steel erection (HS-62)					
Welding and cutting (HS-22)			X		
Aerial Lifts (HS-41)					
Hand & Power Tools (HS-50)	X	X	X	X	
Forklifts (HS-48)			X		
Drilling (HS_35)					
Noise (HS-39)	X	X	X	X	X
Pressurized Lines/Equipment		X		X	
Pressure Washing/Equip Decon	X	X		X	X
Vacuum Truck/Pumping Operations					
Suspended Loads			X		
Vehicle Traffic	X	X	X	X	X
Haul Truck Operations		X			X
Visible Lighting	X	X	X	X	X
Mechanical Guarding Hazards	X	X	X	X	
Asbestos Hazard					
Lead Hazard					
Chemical Hazard-Dermal/Inhalation		X	X		
Dust Hazard (Silica/Metals)		X	X		
Fire/Explosion Hazards	X				

3.0 Hazard Control

This section provides safe work practices and control measures used to reduce or eliminate potential hazards. These practices and controls are to be implemented by the party in control of either the site or the particular hazard. CH2M HILL employees and subcontractors must remain aware of the hazards affecting them regardless of who is responsible for controlling the hazards. CH2MHILL employees and subcontractors who do not understand any of these provisions should contact the Site Health and Safety Specialist (SHSS) for clarification.

The health and safety hazards posed by field activities have been identified for each project activity and is provided in this section. Hazard control measures for project-specific and general H&S hazards are provided in 3.1 and 3.2 of this section.

Activity Hazard Analysis (AHA) will be prepared before beginning each project activity posing H&S hazards to project personnel using the AHA form provided in Attachment 5 as a guide. The AHA shall identify the work tasks required to perform each activity, along with potential H&S hazards and recommended control measures for each work task. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified. AHAs shall be submitted to the Navy Technical Representative (NTR) for review at least 15 days prior to the start of each project activity phase.

In addition to the controls specified in this section, Project-Activity Self-Assessment Checklists are contained in Attachment 6. These checklists are to be used to assess the adequacy of CH2M HILL and subcontractor site-specific safety requirements. The objective of the self-assessment process is to identify gaps in project safety performance, and prompt for corrective actions in addressing these gaps. Self-assessment checklists should be completed early in the project, when tasks or conditions change, or when otherwise specified by the HSM. The self-assessment checklists, including documented corrective actions, should be made part of the permanent project records.

Project-activity self-assessments checklist shall be completed weekly by the SHSS during the course of the project, completing the applicable checklist depending on the work performed at the time on the project.

3.1 Project-Specific Hazards

3.1.1 Working around Material Handling Equipment

- Never approach operating equipment from the rear. Always make positive contact with the operator, and confirm that the operator has stopped the motion of the equipment.
- Never approach the side of operating equipment; remain outside of the swing and turning radius.

- Maintain distance from pinch points of operating equipment.
- Because heavy equipment may not be equipped with properly functioning reverse signal alarms, never turn your back on any operating equipment.
- Never climb onto operating equipment or operate contractor/subcontractor equipment.
- Never ride contractor/subcontractor equipment unless it is designed to accommodate passengers; equipped with firmly attached passenger seat.
- Never work or walk under a suspended load.
- Never use equipment as a personnel lift; do not ride excavator buckets or crane hooks.
- Always stay alert and maintain a safe distance from operating equipment, especially equipment on cross slopes and unstable terrain.

3.1.2 Excavation Activities

(Reference CH2M HILL, SOP HS-32, *Excavation and Trenching*)

- CH2M HILL personnel must notify and be granted authorization from the excavation competent person prior to entering any excavation. CH2M HILL personnel must follow all excavation requirements established by the competent person.
- The competent person must inspect the trench and/or excavation everyday and after everyday hazard increasing event. Documentation of this inspection must be maintained onsite at all times.
- Excavations must be protected from cave-ins by adequate protective systems unless the excavation is less than 5 feet in depth and a competent person determines there is no indication of cave-in or the excavation is made entirely in stable rock that is not fractured.
- Prior to excavating at a location, buried utilities in the area must be identified; refer to Section 3.2.8 "Procedures for locating buried utilities".
- CH2M HILL personnel must not enter any excavation where protective systems are deficient at any time, for any reason. The competent person must be notified of such conditions.
- Refer to CH2M HILL SOP HS-32 "Excavations and Trenching" for more specific details on excavation requirements.

3.1.3 Operating Heavy Equipment

(Reference CH2M HILL, SOP HS-27, *Earthmoving Equipment*)

- CH2M HILL authorizes only those employees qualified by training or previous experience to operate material handling equipment.
- Equipment must be checked at the beginning of each shift to ensure the equipment is in safe operating condition and free of apparent damage. The check should include: service brakes, parking brakes, emergency brakes, tires, horn, back-up alarm, steering

mechanism, coupling devices, seat belts and operating controls. All defects shall be corrected before the equipment is placed in service. Documentation of this inspection must be maintained onsite at all times.

- Equipment must be on a stable foundation such as solid ground or cribbing; outriggers are to be fully extended.
- Equipment must not be used to lift personnel; loads must not be lifted over the heads of personnel.
- Equipment, or parts thereof, which are suspended must be substantially blocked or cribbed to prevent shifting before personnel are permitted to work under or between them. All controls shall be in a neutral position, with the motors stopped and brakes set.
- Equipment which is operating in reverse must have a reverse signal alarm distinguishable from the surrounding noise or a signal person when the operators view is obstructed.
- When equipment is used near energized powerlines, the closest part of the equipment must be at least 10 feet from the powerlines < 50 kV. Provide an additional 4 feet for every 10 kV over 50 kV. A person must be designated to observe clearances and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means. All overhead powerlines must be considered to be an energized until the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded.
- Underground utility lines must be located before excavation begins; refer to Section 3.2.11 "Procedures for locating buried utilities".
- Operators loading/unloading from vehicles are responsible for seeing that vehicle drivers are in the vehicle cab or in a safe area.
- The parking brake shall be set whenever equipment is parked, wheels must be chocked when parked on inclines.
- When not in operation, the blade/bucket must be blocked or grounded; the master clutch must be disengaged when the operator leaves the cab. When equipment is unattended, power must be shut off, brakes set, blades/buckets landed and shift lever in neutral.

3.1.4 Confined Space Entry

(Reference CH2M HILL SOP HS-17, Confined Space Entry)

Project personnel are not anticipated to enter permit-required confined spaces during field activities.

The following requirements must be met prior to confined space entry:

- CH2M HILL personnel entering a confined spaces must have completed the 8-hour confined space entry training in the Recovery Center.

- Prior to entry, a confined space permit must be completed identifying entry requirements. Entrants must review the permit prior to each entry to verify the requirements have been satisfied.
- The atmosphere in the space must be tested with air monitoring equipment. CH2M HILL personnel must confirm the test results are consistent with acceptable entry conditions.
- Mechanical ventilation (portable blower) shall be applied to the space when these atmospheric conditions are not met during entries. Re-entry may only occur when the above atmospheric conditions are met and mechanical ventilation is continuously applied to maintain these conditions.
- CH2M HILL personnel entering confined spaces requiring respiratory protection must have completed respiratory protection training in the Basic program, received a respirator fit test and completed respirator wearer medical surveillance.
- Refer to CH2M HILL SOP HS-17 "Confined Space Entry" for more specific details on confined space entry requirements.

3.1.5 Forklift Operations

Forklifts may be required for materials movement during project activities. Forklifts present the potential for damage to equipment, materials and personnel by impaling or striking personnel or materials with the forklift tines. Additionally, forklifts may tip if they are incorrectly loaded, driven at excessive speeds or operated with the forks too high.

The following rules apply whenever a forklift is used on the project:

- A rated lifting capacity must be posted in a location readily visible to the operator.
- A forklift truck must not be used to elevate employees unless a platform with guardrails, a back guard, and a kill switch is provided on the vehicle. When guardrails are not possible, fall arrest protection is required.
- The subcontractor operating the forklift must post and enforce a set of operating rules for forklift trucks.
- Only trained and authorized drivers will operate forklifts.
- Stunt driving and horseplay are prohibited.
- Employees must not ride on the forks.
- Employees must never be permitted under the forks (unless forks are blocked).
- The driver must inspect the forklift once a shift and document this inspection.
- The operator must look in the direction of travel and must not move the vehicle until all persons are clear of the vehicle.
- Forks must be carried as low as possible.

- The operator must lower the forks, shut off the engine, and set the brakes (or block the wheels) before leaving the forklift operator's position unless maintenance or safety inspections require the forklift to be running.
- Trucks must be blocked and have brakes set when forklifts are driven onto their beds.
- Extreme care must be taken when tilting elevated loads.
- Every forklift must have operable brakes capable of safely stopping it when fully loaded.
- Forklifts must have parking brakes and an operable horn.

When the operator is exposed to possible falling objects, industrial trucks must be equipped with overhead protection (canopy).

3.1.6 Exposure to Public Vehicular Traffic

The following precautions must be taken when working around traffic, and in or near an area where traffic controls have been established by a contractor.

- Exercise caution when exiting traveled way or parking along street – avoid sudden stops, use flashers, etc.
- Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.
- All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.
- Eye protection should be worn to protect from flying debris.
- Remain aware of factors that influence traffic related hazards and required controls – sun glare, rain, wind, flash flooding, limited sight-distance, hills, curves, guardrails, width of shoulder (i.e., breakdown lane), etc.
- Always remain aware of an escape route -- behind an established barrier, parked vehicle, guardrail, etc.
- Always pay attention to moving traffic – never assume drivers are looking out for you.
- Work as far from traveled way as possible to avoid creating confusion for drivers.
- When workers must face away from traffic, a “buddy system” should be used, where one worker is looking towards traffic.
- When working on highway projects, obtain a copy of the contractor's traffic control plan.
- Work area should be protected by a physical barrier – such as a K-rail or Jersey barrier.
- Review traffic control devices to ensure that they are adequate to protect your work area. Traffic control devices should: 1) convey a clear meaning, 2) command respect of road users, and 3) give adequate time for proper traffic response. The adequacy of these

devices are dependent on limited sight distance, proximity to ramps or intersections, restrictive width, duration of job, and traffic volume, speed, and proximity.

- Either a barrier or shadow vehicle should be positioned a considerable distance ahead of the work area. The vehicle should be equipped with a flashing arrow sign and truck-mounted crash cushion (TMCC). All vehicles within 40 feet of traffic should have an orange flashing hazard light atop the vehicle.
- Except on highways, flaggers should be used when 1) two-way traffic is reduced to using one common lane, 2) driver visibility is impaired or limited, 3) project vehicles enter or exit traffic in an unexpected manner, or 4) the use of a flagger enhances established traffic warning systems.
- Lookouts should be used when physical barriers are not available or practical. The lookout continually watches approaching traffic for signs of erratic driver behavior and warns workers. Vehicles should be parked at least 40 feet away from the work zone and traffic. Minimize the amount of time that you will have your back to oncoming traffic.

3.1.7 Rigging

- Stay as clear as possible of all hoisting operations. Loads shall not be hoisted overhead of personnel.
- Hoists shall not be used to lift or lower personnel.
- Do not exceed hoist load limits.
- Ensure load is level and stable before hoisting
- Inspect all rigging equipment prior to use. Do not use defective rigging for any reason.
- Only use rigging equipment for the purpose it was designed and intended.
- A Weight Handling Equipment Incident Report shall be provided to the Contracting Officer within 30 days of any accident.

3.2 General Hazards

3.2.1 General Practices and Housekeeping

(Reference CH2M HILL- SOP HS-20, *General Practices*)

- Site work should be performed during daylight hours whenever possible. Work conducted during hours of darkness require enough illumination intensity to read a newspaper without difficulty.
- Good housekeeping must be maintained at all times in all project work areas.
- Common paths of travel should be established and kept free from the accumulation of materials.
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions.

- Provide slip-resistant surfaces, ropes, and/or other devices to be used.
- Specific areas should be designated for the proper storage of materials.
- Tools, equipment, materials, and supplies shall be stored in an orderly manner.
- As work progresses, scrap and unessential materials must be neatly stored or removed from the work area.
- Containers should be provided for collecting trash and other debris and shall be removed at regular intervals.
- All spills shall be quickly cleaned up. Oil and grease shall be cleaned from walking and working surfaces.

3.2.2 Hazard Communication

(Reference CH2M HILL-SOP HS-05, *Hazard Communication*)

The SHSS is to perform the following:

- Complete an inventory of chemicals brought onsite by CH2M HILL using Attachment 2.
- Confirm that an inventory of chemicals brought on site by CH2M HILL subcontractors is available.
- Request or confirm locations of Material Safety Data Sheets (MSDSs) from the client, contractors, and subcontractors for chemicals to which CH2M HILL employees potentially are exposed.
- Before or as the chemicals arrive on site, obtain an MSDS for each hazardous chemical.
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.
- Give employees required chemical-specific HAZCOM training using Attachment 3.
- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.

3.2.3 Shipping and Transportation of Chemical Products

(Reference CH2M HILL's *Procedures for Shipping and Transporting Dangerous Goods*)

Chemicals brought to the site might be defined as hazardous materials by the U.S. Department of Transportation (DOT). All staff who ship the materials or transport them by road must receive CH2M HILL training in shipping dangerous goods. All hazardous materials that are shipped (e.g., via Federal Express) or are transported by road must be properly identified, labeled, packed, and documented by trained staff. Contact the HSM or the Equipment Coordinator for additional information.

3.2.4 Lifting

(Reference CH2M HILL-SOP HS-29, *Lifting*)

- Proper lifting techniques must be used when lifting any object.
 - Plan storage and staging to minimize lifting or carrying distances.
 - Split heavy loads into smaller loads.

- Use mechanical lifting aids whenever possible.
- Have someone assist with the lift -- especially for heavy or awkward loads.
- Make sure the path of travel is clear prior to the lift.

3.2.5 Fire Prevention

(Reference CH2M HILL- SOP HS-22, *Fire Prevention*)

- Fire extinguishers shall be provided so that the travel distance from any work area to the nearest extinguisher is less than 100 feet. When 5 gallons or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet. Extinguishers must:
 - be maintained in a fully charged and operable condition,
 - be visually inspected each month, and
 - undergo a maintenance check each year.
- The area in front of extinguishers must be kept clear.
- Post “Exit” signs over exiting doors, and post “Fire Extinguisher” signs over extinguisher locations.
- Combustible materials stored outside should be at least 10 feet from any building.
- Solvent waste and oily rags must be kept in a fire resistant, covered container until removed from the site.
- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet.

3.2.6 Electrical

(Reference CH2M HILL-SOP HS-23, *Electrical*)

- Only qualified personnel are permitted to work on unprotected energized electrical systems.
- Only authorized personnel are permitted to enter high-voltage areas.
- Do not tamper with electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until lockout/tagout procedures are implemented.
- Inspect electrical equipment, power tools, and extension cords for damage prior to use. Do not use defective electrical equipment, remove from service.
- All temporary wiring, including extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed.
- Extension cords must be:
 - equipped with third-wire grounding.
 - covered, elevated, or protected from damage when passing through work areas.
 - protected from pinching if routed through doorways.
 - not fastened with staples, hung from nails, or suspended with wire.

- Electrical power tools and equipment must be effectively grounded or double-insulated UL approved.
- Operate and maintain electric power tools and equipment according to manufacturers' instructions.
- Maintain safe clearance distances between overhead power lines and any electrical conducting material unless the power lines have been de-energized and grounded, or where insulating barriers have been installed to prevent physical contact. Maintain at least 10 feet from overhead power lines for voltages of 50 kV or less, and 10 feet plus ½ inch for every 1 kV over 50 kV.
- Temporary lights shall not be suspended by their electric cord unless designed for suspension. Lights shall be protected from accidental contact or breakage.
- Protect all electrical equipment, tools, switches, and outlets from environmental elements.

3.2.7 Stairways and Ladders

(Reference CH2M HILL-SOP HS-25, *Stairways and Ladders*)

- Stairway or ladder is generally required when a break in elevation of 19 inches or greater exists.
- Personnel should avoid using both hands to carry objects while on stairways; if unavoidable, use extra precautions.
- Personnel must not use pan and skeleton metal stairs until permanent or temporary treads and landings are provided the full width and depth of each step and landing.
- Ladders must be inspected by a competent person for visible defects prior to each day's use. Defective ladders must be tagged and removed from service.
- Ladders must be used only for the purpose for which they were designed and shall not be loaded beyond their rated capacity.
- Only one person at a time shall climb on or work from an individual ladder.
- User must face the ladder when climbing; keep belt buckle between side rails
- Ladders shall not be moved, shifted, or extended while in use.
- User must use both hands to climb; use rope to raise and lower equipment and materials
- Straight and extension ladders must be tied off to prevent displacement
- Ladders that may be displaced by work activities or traffic must be secured or barricaded
- Portable ladders must extend at least 3 feet above landing surface
- Straight and extension ladders must be positioned at such an angle that the ladder base to the wall is one-fourth of the working length of the ladder

- Stepladders are to be used in the fully opened and locked position
- Users are not to stand on the top two steps of a stepladder; nor are users to sit on top or straddle a stepladder
- Fixed ladders > 24 feet in height must be provided with fall protection devices.
- Fall protection should be considered when working from extension, straight, or fixed ladders greater than 6 feet from lower levels and both hands are needed to perform the work, or when reaching or working outside of the plane of ladder side rails.

3.2.8 Heat Stress

(Reference CH2M HILL- SOP HS-09, *Heat and Cold Stress*)

- Drink 16 ounces of water before beginning work. Disposable cups and water maintained at 50°F to 60°F should be available. Under severe conditions, drink one to two cups every 20 minutes, for a total of 1 to 2 gallons per day. Do not use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours.
- Acclimate yourself by slowly increasing workloads (e.g., do not begin with extremely demanding activities).
- Use cooling devices, such as cooling vests, to aid natural body ventilation. These devices add weight, so their use should be balanced against efficiency.
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- Conduct field activities in the early morning or evening and rotate shifts of workers, if possible.
- Avoid direct sun whenever possible, which can decrease physical efficiency and increase the probability of heat stress. Take regular breaks in a cool, shaded area. Use a wide-brim hat or an umbrella when working under direct sun for extended periods.
- Provide adequate shelter/shade to protect personnel against radiant heat (sun, flames, hot metal).
- Maintain good hygiene standards by frequently changing clothing and showering.
- Observe one another for signs of heat stress. Persons who experience signs of heat syncope, heat rash, or heat cramps should consult the SHSS to avoid progression of heat-related illness.

Symptoms and Treatment of Heat Stress

	Heat Syncope	Heat Rash	Heat Cramps	Heat Exhaustion	Heat Stroke
Signs and Symptoms	Sluggishness or fainting while standing erect or immobile in heat.	Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature.
Treatment	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.	Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.	Remove to cooler area. Rest lying down. Increase fluid intake.	Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.	Cool rapidly by soaking in cool—but not cold—water. Call ambulance, and get medical attention immediately!

Monitoring Heat Stress

These procedures should be considered when the ambient air temperature exceeds 70°F, the relative humidity is high (>50 percent), or when workers exhibit symptoms of heat stress.

The heart rate (HR) should be measured by the radial pulse for 30 seconds, as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 100 beats/minute, or 20 beats/minute above resting pulse. If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the pulse rate still exceeds 100 beats/minute at the beginning of the next rest period, the work cycle should be further shortened by 33 percent. The procedure is continued until the rate is maintained below 100 beats/minute, or 20 beats/minute above resting pulse.

3.2.9 Cold Stress

(Reference CH2M HILL- SOP HS-09, *Heat and Cold Stress*)

- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.
- Consider monitoring the work conditions and adjusting the work schedule using guidelines developed by the U.S. Army (wind-chill index) and the National Safety Council (NSC).
- Wind-Chill Index is used to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For those reasons, it should only be used as a guideline to warn workers when they are in a situation that can cause cold-related illnesses.

- NSC Guidelines for Work and Warm-Up Schedules can be used with the wind-chill index to estimate work and warm-up schedules for fieldwork. The guidelines are not absolute; workers should be monitored for symptoms of cold-related illnesses. If symptoms are not observed, the work duration can be increased.
- Persons who experience initial signs of immersion foot, frostbite, hypothermia should consult the SHSS to avoid progression of cold-related illness.
- Observe one another for initial signs of cold-related disorders.
- Obtain and review weather forecast – be aware of predicted weather systems along with sudden drops in temperature, increase in winds, and precipitation.

Symptoms and Treatment of Cold Stress

	Immersion (Trench) Foot	Frostbite	Hypothermia
Signs and Symptoms	Feet discolored and painful; infection and swelling present.	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.
Treatment	Seek medical treatment immediately.	Remove victim to a warm place. Re-warm area quickly in warm—but not hot—water. Have victim drink warm fluids, but not coffee or alcohol. Do not break blisters. Elevate the injured area, and get medical attention.	Remove victim to a warm place. Have victim drink warm fluids, but not coffee or alcohol. Get medical attention.

3.2.10 Compressed Gas Cylinders

- Valve caps must be in place when cylinders are transported, moved, or stored.
- Cylinder valves must be closed when cylinders are not being used and when cylinders are being moved.
- Cylinders must be secured in an upright position at all times.
- Cylinders must be shielded from welding and cutting operations and positioned to avoid being struck or knocked over; contacting electrical circuits; or exposed to extreme heat sources.
- Cylinders must be secured on a cradle, basket, or pallet when hoisted; they may not be hoisted by choker slings.

3.2.11 Procedures for Locating Buried Utilities

- Where available, obtain utility diagrams for the facility.
- Review locations of sanitary and storm sewers, electrical conduits, water supply lines, natural gas lines, and fuel tanks and lines.

- Review proposed locations of intrusive work with facility personnel knowledgeable of locations of utilities. Check locations against information from utility mark-out service.
- Where necessary (e.g., uncertainty about utility locations), excavation or drilling of the upper depth interval should be performed manually
- Monitor for signs of utilities during advancement of intrusive work (e.g., sudden change in advancement of auger or split spoon).
- When the client or other onsite party is responsible for determining the presence and locations of buried utilities, the SHSS should confirm that arrangement.

3.3 Biological Hazards and Controls

3.3.1 Snakes

Snakes typically are found in underbrush and tall grassy areas. If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area. If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Seek medical attention immediately. **DO NOT** apply ice, cut the wound, or apply a tourniquet. Try to identify the type of snake: note color, size, patterns, and markings.

3.3.2 Poison Ivy and Poison Sumac

Poison ivy, poison oak, and poison sumac typically are found in brush or wooded areas. They are more commonly found in moist areas or along the edges of wooded areas. Become familiar with the identity of these plants. Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention.

3.3.3 Ticks

Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to 0.75 inch in size. Wear tightly woven light-colored clothing with long sleeves and pant legs tucked into boots; spray **only outside** of clothing with permethrin or permethrin and spray skin with only DEET; and check yourself frequently for ticks. Bug repellents will not be used if it is determined the active ingredient(s) will interfere with target sample list.

If bitten by a tick, grasp it at the point of attachment and carefully remove it. After removing the tick, wash your hands and disinfect and press the bite areas. Save the removed tick. Report the bite to human resources. Look for symptoms of Lyme disease or Rocky Mountain spotted fever (RMSF). Lyme: a rash might appear that looks like a bullseye with a small welt in the center. RMSF: a rash of red spots under the skin 3 to 10 days after the tick bite. In both cases, chills, fever, headache, fatigue, stiff neck, and bone pain may develop. If symptoms appear, seek medical attention.

3.3.4 Bees and Other Stinging Insects

Bee and other stinging insects may be encountered almost anywhere and may present a serious hazard, particularly to people who are allergic. Watch for and avoid nests. Keep exposed skin to a minimum. Carry a kit if you have had allergic reactions in the past, and inform the SHSS and/or buddy. If a stinger is present, remove it carefully with tweezers. Wash and disinfect the wound, cover it, and apply ice. Watch for allergic reaction; seek medical attention if a reaction develops.

3.3.5 Bloodborne Pathogens

(Reference CH2M HILL- SOP HS-36, *Bloodborne Pathogens*)

Exposure to bloodborne pathogens may occur when rendering first aid or CPR, or when coming into contact with landfill waste or waste streams containing potentially infectious material. Exposure controls and personal protective equipment (PPE) are required as specified in CH2M HILL SOP HS-36, *Bloodborne Pathogens*. Hepatitis B vaccination must be offered before the person participates in a task where exposure is a possibility.

3.3.6 Mosquito Bites

Due to the recent detection of the West Nile Virus in the Southeastern United States it is recommended that **preventative measures** be taken to reduce the probability of being bitten by mosquitoes whenever possible. Mosquitoes are believed to be the primary source for exposure to the West Nile Virus as well as several other types of encephalitis . The following guidelines should be followed to reduce the risk of these concerns for working in areas where mosquitoes are prevalent.

- Stay indoors at dawn, dusk, and in the early evening.
- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Spray clothing with repellents containing permethrin or DEET since mosquitoes may bite through thin clothing.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35% DEET (N,N-diethyl-meta-toluamide). DEET in high concentrations (greater than 35%) provides no additional protection.
- Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands.
- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's DIRECTIONS FOR USE, as printed on the product.

Note: Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

3.3.6.1 Symptoms of Exposure to the West Nile Virus

Most infections are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death.

The West Nile Virus incubation period is from 3-15 days.

If you have any questions or to report any suspicious symptoms, contact the project Health and Safety Manager.

3.3.7 Other Anticipated Biological Hazards

No other biological hazards are anticipated.

3.4 Radiological Hazards and Controls

No known radiological hazards are anticipated. If a radiological hazard is encountered, refer to CH2M HILL's *Corporate Health and Safety Program, Program and Training Manual*, and *Corporate Health and Safety Program, Radiation Protection Program Manual*, for standards of practice in contaminated areas.

3.5 Chemical Hazards

The following describes the chemical hazards posed by remedial activities at the project. Chemical contaminants of concern (COC), along with their maximum concentration in soil/groundwater, the applicable exposure limit/IDLH and symptoms of exposure are listed in Table 3-1.

3.6 Potential Routes of Exposure

- **Dermal:** Contact with contaminated media. This route of exposure is minimized through proper use of PPE, as specified in Section 5.
- **Inhalation:** Vapors and contaminated particulates. This route of exposure is minimized through proper respiratory protection and monitoring, as specified in Sections 5 and 6, respectively.
- **Other:** Inadvertent ingestion of contaminated media. This route should not present a concern if good hygiene practices are followed (e.g., wash hands and face before drinking or smoking).

TABLE 3-1
Contaminants of Concern
(Refer to Project Files for more detailed contaminant information)

Contaminant	Location and Maximum ^a Concentration	Exposure Limit ^b	IDLH ^c	Symptoms and Effects of Exposure	PIP ^d (eV)
Cadmium	GW: Undetected SB: 1.34 mg/kg (085-08-102-S-12 ^E) SS: N/A	0.005 mg/m ³	9 Ca	Pulmonary edema, coughing, chest tightness/pain, headache, chills, muscle aches, nausea, vomiting, diarrhea, difficulty breathing, loss of sense of smell, emphysema, mild anemia	NA
Dieldrin	GW: 0.0291 µg/L (085-24-51-GW-16 ^F) SB: .0572 mg/kg (085-24-55-S-11 ^F) SS: 0.0123 mg/kg (085-08-110-S-1 ^E)	0.25 mg/ m ³	50 mg/ m ³ Ca	Headaches, dizziness; nausea, vomiting, malaise; sweating; myoclonic jerks of limbs; clonic, tonic convulsions; coma; [carc]	UK

Footnotes:

^a Specify sample-designation and media: SB (Soil Boring), A (Air), D (Drums), GW (Groundwater), L (Lagoon), TK (Tank), S (Surface Soil), SL (Sludge), SW (Surface Water).

^b Appropriate value of PEL, REL, or TLV listed.

^c IDLH = immediately dangerous to life and health (units are the same as specified "Exposure Limit" units for that contaminant); NL = No limit found in reference materials; CA = Potential occupational carcinogen.

^d PIP = photoionization potential; NA = Not applicable; UK = Unknown.

^E Sample collected from Site 8

^F Sample collected from Site 24

4.0 Project Organization and Personnel

4.1 CH2M HILL Employee Medical Surveillance and Training

(Reference CH2M HILL- SOPs HS-01, *Medical Surveillance*, and HS-02, *Health and Safety Training*)

The employees listed meet state and federal hazardous waste operations requirements for 40-hour initial training, 3-day on-the-job experience, and 8-hour annual refresher training. Employees designated "SHSS" have completed a 12-hour site safety coordinator course, and have documented requisite field experience. An SHSS with a level designation (D, C, B) equal to or greater than the level of protection being used must be present during all tasks performed in exclusion or decontamination zones. Employees designated "FA-CPR" are currently certified by the American Red Cross, or equivalent, in first aid and CPR. At least one FA-CPR designated employee must be present during all tasks performed in exclusion or decontamination zones. At least two FA-CPR trained employees must be available at each job site/operation. The employees listed below are currently active in a medical surveillance program that meets state and federal regulatory requirements for hazardous waste operations. Certain tasks (e.g., confined-space entry) and contaminants (e.g., lead) may require additional training and medical monitoring.

Pregnant employees are to be informed of and are to follow the procedures in CH2M HILL-SOP HS-04, Reproduction Protection, including obtaining a physician's statement of the employee's ability to perform hazardous activities before being assigned fieldwork.

Employee Name	Office	Responsibility	SHSS/FA-CPR
Amy Twitty	NVR	Project Manager	40 HR, SC-HW; FA-CPR
Rich Rathnow	ORO	HSM	SC-HW-C; FA-CPR
Darryl Gates	NVR	SHSS	SHSS; 40HR, FA-CPR; 10 HR Construction
Ryan Bitely	NVR	Project QC Manager	40HR, FA-CPR
Phyllis Zerangue	NVR	Field Technician	40HR, FA-CPR
Taj Goodpaster	NVR	Field Technician	40HR, FA-CPR
Chris Posey	NVR	Field Technician	40HR, FA-CPR
Scott Dunbar	ATL	Construction Manager/SHSS	SC-HW-C; FA-CPR

4.2 Field Team Chain of Command and Communication Procedures

4.2.1 Client: Southern Division, U.S. Navy Facilities Engineering Command

Contact Name: ACO – Richard Stanley, COTR – Jimmy Jones

Phone: 843/820-5544

Facility Contact Name: Greg Campbell

Phone (850)492-4611 ext. 103

4.2.2 CH2M HILL

Program Manager: Scott Newman/ATL

Project Manager: Amy Twitty/NVR

Health and Safety Manager: Rich Rathnow/ORO

Field Team Leader: Scott Dunbar/ATL

Site Safety Coordinator: Scott Dunbar /ATL

The CH2M HILL/CH2M HILL project manager (PM) is responsible for providing adequate resources (budget and staff) for project-specific implementation of the HS&E management process. The PM has overall management responsibility for the tasks listed below. The PM may explicitly delegate specific tasks to other staff, as described in sections that follow, but retains ultimate responsibility for completion of the following in accordance with this SOP:

- Include standard terms and conditions, and contract-specific HS&E roles and responsibilities in contract and subcontract agreements (including flow-down requirements to lower-tier subcontractors)
- Select safe and competent subcontractors by:
 - obtaining, reviewing and accepting or rejecting subcontractor pre-qualification questionnaires
 - ensuring that acceptable certificates of insurance, including CH2M HILL as named additional insured, are secured as a condition of subcontract award
 - including HS&E submittals checklist in subcontract agreements, and ensuring that appropriate site-specific safety procedures, training and medical monitoring records are reviewed and accepted prior to the start of subcontractor's field operations
- Maintain copies of subcontracts and subcontractor certificates of insurance (including CH2M HILL as named additional insured), bond, contractors license, training and medical monitoring records, and site-specific safety procedures in the project file accessible to site personnel
- Provide oversight of subcontractor HS&E practices per the site-specific safety plan
- Ensure that the overall, job-specific, HS&E goals are fully and continuously implemented

The CH2M HILL Navy RAC H&S manager is responsible for:

- Review and accept or reject subcontractor pre-qualification questionnaires that fall outside the performance range delegated to the Contracts Administrator (KA)
- Review and accept or reject subcontractor training records and site-specific safety procedures prior to start of subcontractor's field operations
- Support the SHSS's oversight of subcontractor (and lower-tier subcontractors) HS&E practices and interfaces with onsite 3rd parties per the site-specific safety plan

The SHSS is responsible for verifying that the project is conducted in a safe manner including the following specific obligations:

- Verify these HSP are current and amended when project activities or conditions change
- Verify CH2M HILL site personnel and subcontractor personnel read these FSI and sign Attachment 1 "Employee Signoff Form" prior to commencing field activities
- Verify CH2M HILL site personnel and subcontractor personnel have completed any required specialty training (e.g., fall protection, confined space entry) and medical surveillance as identified in Section 2
- Verify compliance with the requirements of these FSI and applicable subcontractor health and safety plan(s)
- Act as the project "Hazard Communication Coordinator"
- Act as the project "Emergency Response Coordinator" and perform the responsibilities outlined in Section 4
- Post OSHA job-site poster; the poster is required at sites where project field offices, trailers, or equipment-storage boxes are established; posters can be obtained by calling 800/548-4776 or 800/999-9111
- Verify that safety meetings are conducted and documented in the project file initially and as needed throughout the course of the project (e.g., as tasks or hazards change)
- Verify that project H&S forms and permits, found in Attachment 7, are being used as outlined in Section 2
- Perform oversight and/or assessments of subcontractor HS&E practices per the site-specific safety plan and verify that project activity self-assessment checklists, found in Attachment 6, are being used as outlined in Section 2
- Verify that project files available to site personnel include copies of executed subcontracts and subcontractor certificates of insurance (including CH2M HILL as named additional insured), bond, contractors license, training and medical monitoring records, and site-specific safety procedures prior to start of subcontractor's field operations
- Coordinate with the HS&E manager regarding CH2M HILL and subcontractor operational performance, interfaces

- Ensure that the overall, job-specific, HS&E goals are fully and continuously implemented

The training required for the SHSS is as follows:

- SHSS 10-hour course
- OSHA 10-hour course for Construction
- First Aid and CPR
- Relevant Competent Person Courses (excavation, confined space, scaffold, fall protection, etc.)

The SHSS is responsible for contacting the Field Team Leader and Project Manager. In general, the Project Manager will contact the client. The Health and Safety Manager should be contacted as appropriate.

4.2.3 CH2M HILL Subcontractors

(Reference CH2M HILL- SOP HS-55, *Subcontractor, Contractor, and Owner*)

Certain subcontractors (drilling, remedial and construction contractors) are required to be pre-qualified for safety by completing the Subcontractor Safety Performance Questionnaire. The subcontractors, who will be identified at a later date, are covered by this HSP.

However, this plan does not address hazards associated with the tasks and equipment that the subcontractor has expertise in (e.g., drilling, excavation work, electrical). Subcontractors are responsible for the health and safety procedures specific to their work, and are required to submit these procedures to CH2M HILL for review before the start of field work by following the Subcontractor Safety Procedure Criteria specific to their work.

Subcontractors are also required to prepare Activity Hazard Analysis before beginning each activity posing H&S hazards to their personnel using the AHA form provided in Attachment 5 as a guide. The AHA shall identify the principle steps of the activity, potential H&S hazards for each step and recommended control measures for each identified hazard. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified.

Subcontractors must comply with the established health and safety plan(s). The CH2M HILL SHSS should verify that subcontractor employee training, medical clearance, and fit test records are current and must monitor and enforce compliance with the established plan(s). CH2M HILL oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s).

CH2M HILL should continuously endeavor to observe subcontractors' safety performance. This endeavor should be reasonable, and include observing for hazards or unsafe practices that are both readily observable and occur in common work areas. CH2M HILL is not responsible for exhaustive observation for hazards and unsafe practices. In addition to this level of observation, the SHSS is responsible for confirming CH2M HILL subcontractor performance against both the subcontractor's safety plan and applicable self-assessment

checklists. Self-assessment checklists contained in Attachment 6 are to be used by the SHSS to review subcontractor performance.

Health and safety related communications with CH2M HILL subcontractors should be conducted as follows:

- Brief subcontractors on the provisions of this plan, and require them to sign the Employee Signoff Form included in Attachment 1.
- Request subcontractor(s) to brief project team on the hazards and precautions related to their work.
- When apparent non-compliance/unsafe conditions or practices are observed, notify the subcontractor safety representative and require corrective action – the subcontractor is responsible for determining and implementing necessary controls and corrective actions.
- When repeat non-compliance/unsafe conditions are observed, notify the subcontractor safety representative and stop affected work until adequate corrective measures are implemented.
- When an apparent imminent danger exists, immediately remove all affected CH2M HILL employees and subcontractors, notify subcontractor safety representative, and stop affected work until adequate corrective measures are implemented. Notify the Project Manager and HSM as appropriate.
- Document all oral health and safety related communications in project field logbook, daily reports, or other records.

5.0 Personal Protective Equipment

(Reference CH2M HILL- SOP HS-07, *Personal Protective Equipment*, HS-08, *Respiratory Protection*)

Personal Protective equipment (PPE) specifications are listed in Table 5-1.

TABLE 5-1
PPE Specifications^a

Task	Level	Body	Head	Respirator ^b
General site entry Support Personnel with no potential exposure to contaminated soil. Site Restoration	D	Work clothes; steel-toe, leather work boots; work glove.	Hardhat ^c Safety glasses Ear protection ^d	None required
Excavation and Hauling Personnel in direct contact to contaminated soil Soil backfill and compaction	Modified D	Coveralls: Uncoated Tyvek® Boots: Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers Gloves: Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat ^c Splash shield ^c Safety glasses Ear protection ^d	None required.
Tasks requiring upgrade	C	Coveralls: Polycoated Tyvek® Boots: Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers Gloves: Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat ^c Splash shield ^c Ear protection ^d Spectacle inserts	APR, full face, MSA Ultratwin or equivalent; with GME-H cartridges or equivalent ^e .
Tasks requiring upgrade	B	Coveralls: Polycoated Tyvek® Boots: Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers Gloves: Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat ^c Splash shield ^c Ear protection ^d Spectacle inserts	Positive-pressure demand self-contained breathing apparatus (SCBA); MSA Ultralite, or equivalent.

^a Modifications are as indicated. CH2M HILL will provide PPE only to CH2M HILL employees.

^b No facial hair that would interfere with respirator fit is permitted.

^c Hardhat and splash-shield areas are to be determined by the SHSS.

^d Ear protection should be worn when conversations cannot be held at distances of 3 feet or less without shouting.

^e Cartridge change-out schedule is at least every 8 hours (or one work day), except if relative humidity is > 85%, or if organic vapor measurements are > midpoint of Level C range (refer to Section 5)--then at least every 4 hours. If encountered conditions are different than those anticipated in this HSP, contact the HSM.

It is anticipated the level of protection used for employees will be Level D. Performing a task that requires an upgrade to a higher level of protection (e.g., Level D to Level C) is permitted only when the PPE requirements have been approved by the HSM, and an SHSS qualified at that level is present. PPE levels may be upgraded for the following reasons:

- Request from individual performing tasks
- Change in work tasks that will increase contact or potential contact with hazardous materials
- Occurrence or likely occurrence of gas or vapor emission
- Known or suspected presence of dermal hazards

- Instrument action levels (Section 6) exceeded

PPE levels may be downgraded for the following reasons:

- New information indicating that situation is less hazardous than originally thought
- Change in site conditions that decreases the hazard
- Change in work task that will reduce contact with hazardous materials

6.0 Air Monitoring/Sampling

(Reference CH2M HILL- SOP HS-06, *Air Monitoring*)

6.1 Air Monitoring Specifications

Air monitoring specifications are listed in Table 6-1.

TABLE 6-1
Air Monitoring Specifications

Instrument	Tasks	Contaminant Concentration	Action Levels ^a	Frequency ^b	Calibration
Dust Monitor: Miniram model PDM-3 or equivalent	All Operations	< 0.5 mg/m ³	Level D - Use dust suppression	Initially and periodically during tasks	Zero Daily
		> 0.5 mg/m ³	Level C - Use dust suppression		

^a Action levels apply to sustained breathing-zone measurements above background.

^b The exact frequency of monitoring depends on field conditions and is to be determined by the SHSS; generally, every 5 to 15 minutes if acceptable; more frequently may be appropriate. Monitoring results should be recorded. Documentation should include instrument and calibration information, time, measurement results, personnel monitored, and place/location where measurement is taken (e.g., "Breathing Zone/MW-3", "at surface/SB-2", etc.).

^c If the measured percent of O₂ is less than 10, an accurate LEL reading will not be obtained. Percent LEL and percent O₂ action levels apply only to ambient working atmospheres, and not to confined-space entry. More-stringent percent LEL and O₂ action levels are required for confined-space entry (refer to Section 2).

^d Refer to SOP HS-10 for instructions and documentation on radiation monitoring and screening.

^e Noise monitoring and audiometric testing also required.

6.2 Calibration Specifications

(Refer to the respective manufacturer's instructions for proper instrument-maintenance procedures)

Air Monitoring equipment calibration specifications are listed in Table 6-2.

TABLE 6-2
Air Monitoring Equipment Specifications

Instrument	Gas	Span	Reading	Method
PID: OVM, 10.6 or 11.8 eV bulb	100 ppm isobutylene	RF = 1.0	100 ppm	1.5 lpm reg T-tubing
PID: MiniRAE, 10.6 eV bulb	100 ppm isobutylene	CF = 100	100 ppm	1.5 lpm reg T-tubing
PID: TVA 1000	100 ppm isobutylene	CF = 1.0	100 ppm	1.5 lpm reg T-tubing
FID: OVA	100 ppm methane	3.0 ± 1.5	100 ppm	1.5 lpm reg T-tubing
FID: TVA 1000	100 ppm methane	NA	100 ppm	2.5 lpm reg T-tubing
Dust Monitor: Miniram-PDM3	Dust-free air	Not applicable	0.00 mg/m ³ in "Measure" mode	Dust-free area OR Z-bag with HEPA filter
CGI: MSA 260, 261, 360, or 361	0.75% pentane	N/A	50% LEL ± 5% LEL	1.5 lpm reg direct tubing

6.3 Air Sampling

Sampling, in addition to real-time monitoring, may be required by other OSHA regulations where there may be exposure to certain contaminants. Air sampling typically is required when site contaminants include lead, cadmium, arsenic, asbestos, and certain volatile organic compounds. Contact the HSM immediately if these contaminants are encountered.

If air samples are needed, results must be sent immediately to the HSM. Regulations may require reporting to monitored personnel.

7.0 Decontamination

(Reference CH2M HILL- SOP HS-13, *Decontamination*)

The SHSS must establish and monitor the decontamination procedures and their effectiveness. Decontamination procedures found to be ineffective will be modified by the SHSS. The SHSS must ensure that procedures are established for disposing of materials generated on the site.

7.1 Decontamination Specifications

Decontamination specifications are listed in Table 7-1.

TABLE 7-1
Decontamination Specifications

Personnel	Sample Equipment	Heavy Equipment
<ul style="list-style-type: none">• Boot wash/rinse• Glove wash/rinse• Outer-glove removal• Body-suit removal• Inner-glove removal• Respirator removal• Hand wash/rinse• Face wash/rinse• Shower ASAP• Containerize PPE separately pending laboratory results	<ul style="list-style-type: none">• Wash/rinse equipment• Solvent-rinse equipment• Contain solvent waste for offsite disposal	<ul style="list-style-type: none">• Power wash• Steam clean• Dispose of equipment rinse water to facility or sanitary sewer, or contain for offsite disposal

7.2 Diagram of Personnel-Decontamination Line

No eating, drinking, or smoking is permitted in contaminated areas and in exclusion or decontamination zones. The SHSS should establish areas for eating, drinking, and smoking. Contact lenses are not permitted in exclusion or decontamination zones.

Figure 7-1 illustrates a conceptual establishment of work zones, including the decontamination line. Work zones are to be modified by the SHSS to accommodate task-specific requirements.

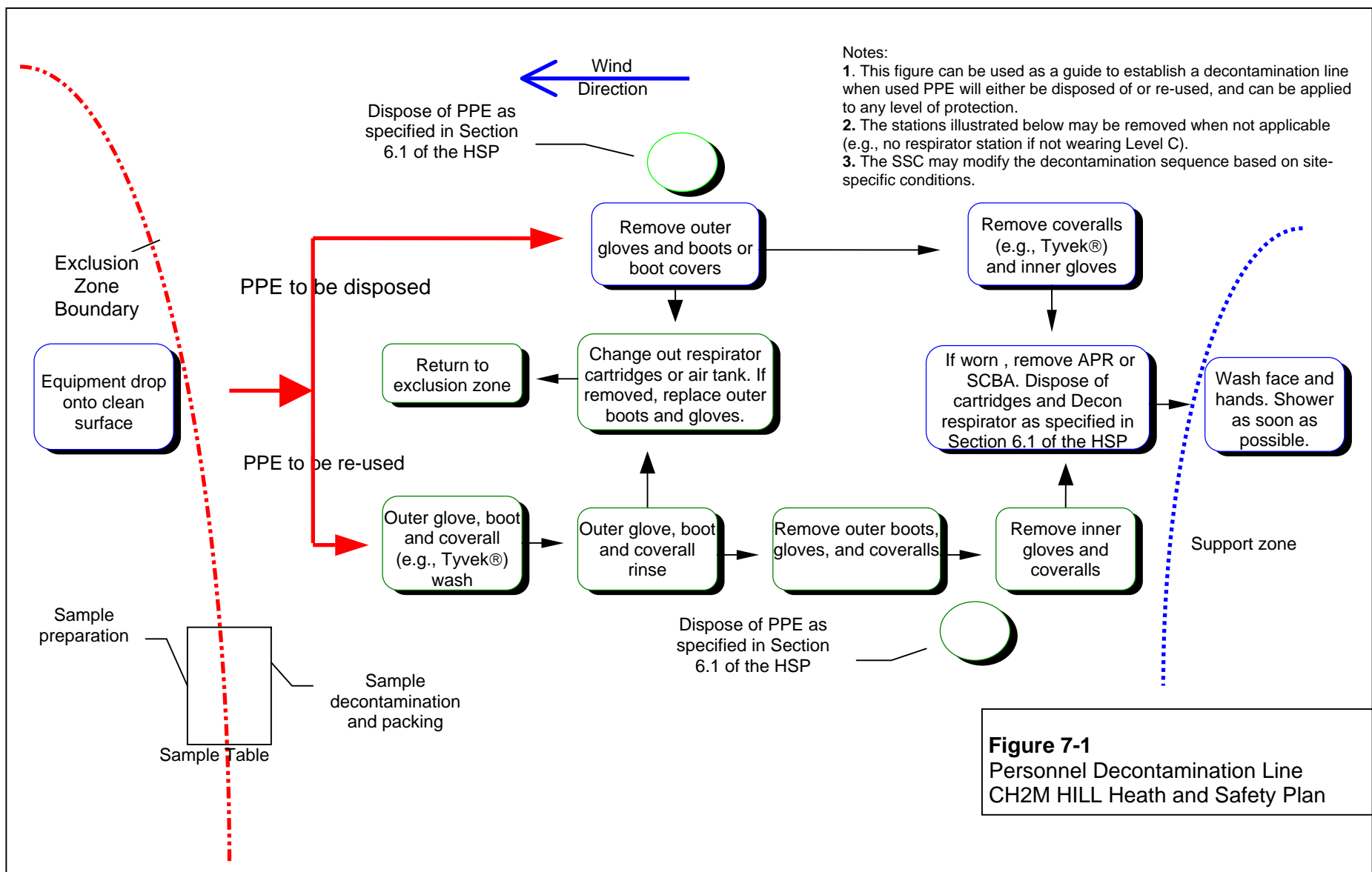


Figure 7-1
Personnel Decontamination Line
CH2M HILL Heath and Safety Plan

8.0 Spill-Containment Procedures

Sorbent material will be maintained in the support zone. Incidental spills will be contained with sorbent and disposed of properly.

9.0 Site Control Plan

9.1 Site Control Procedures

(Reference CH2M HILL- SOP HS-11, *Site Control*)

- The SHSS will conduct a site safety briefing (see below) before starting field activities or as tasks and site conditions change.
- Topics for briefing on site safety: general discussion of Health and Safety Plan, site-specific hazards, locations of work zones, PPE requirements, equipment, special procedures, emergencies.
- The SHSS records attendance at safety briefings in a logbook and documents the topics discussed.
- Post the OSHA job-site poster in a central and conspicuous location in accordance with CH2M HILL- SOP HS-71, OSHA Postings.
- Establish support, decontamination, and exclusion zones. Delineate with flags or cones as appropriate. Support zone should be upwind of the site. Use access control at entry and exit from each work zone.
- Establish onsite communication consisting of the following:
 - Line-of-sight and hand signals
 - Air horn
 - Two-way radio or cellular telephone if available
- Establish offsite communication.
- Establish and maintain the “buddy system.”
- Initial air monitoring is conducted by the SHSS in appropriate level of protection.
- The SHSS is to conduct periodic inspections of work practices to determine the effectiveness of this plan – refer to Sections 2 and 3. Deficiencies are to be noted, reported to the HSM, and corrected.

9.2 Hazwoper Compliance Plan

(Reference CH2M HILL- SOP HS-19, *Site-Specific Written Safety Plans*)

Certain parts of the site work are covered by state or federal Hazwoper standards and therefore require training and medical monitoring. Anticipated Hazwoper tasks might occur consecutively or concurrently with respect to non-Hazwoper tasks. This section outlines procedures to be followed when approved activities specified in Section 3.2 do not require 24- or 40-hour training. Non-Hazwoper-trained personnel also must be trained in accordance with all other state and federal OSHA requirements.

- In many cases, air sampling, in addition to real-time monitoring, must confirm that there is no exposure to gases or vapors before non-Hazwoper-trained personnel are allowed on the site, or while non-Hazwoper-trained staff are working in proximity to Hazwoper activities. Other data (e.g., soil) also must document that there is no potential for exposure. The HSM must approve the interpretation of these data.
- When non-Hazwoper-trained personnel are at risk of exposure, the SHSS must post the exclusion zone and inform non-Hazwoper-trained personnel of the:
 - nature of the existing contamination and its locations
 - limitations of their access
 - emergency action plan for the site
- Periodic air monitoring with direct-reading instruments conducted during regulated tasks also should be used to ensure that non-Hazwoper-trained personnel (e.g., in an adjacent area) are not exposed to airborne contaminants.
- When exposure is possible, non-Hazwoper-trained personnel must be removed from the site until it can be demonstrated that there is no longer a potential for exposure to health and safety hazards.
- Remediation treatment system start-ups: Once a treatment system begins to pump and treat contaminated media, the site is, for the purposes of applying the Hazwoper standard, considered a treatment, storage, and disposal facility (TSDF). Therefore, once the system begins operation, only Hazwoper-trained personnel (minimum of 24 hours of training) will be permitted to enter the site. All non-Hazwoper-trained personnel must not enter the TSDF area of the site.

10.0 Emergency Response Plan

(Reference CH2M HILL- SOP HS-12, *Emergency Response*)

10.1 Pre-Emergency Planning

The SHSS performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with CH2M HILL onsite parties, the facility, and local emergency-service providers as appropriate.

- Review the facility emergency and contingency plans where applicable.
- Determine what onsite communication equipment is available (e.g., two-way radio, air horn).
- Determine what offsite communication equipment is needed (e.g., nearest telephone, cell phone).
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital; communicate the information to onsite personnel.
- Field Trailers: Post “Exit” signs above exit doors, and post “Fire Extinguisher” signs above locations of extinguishers. Keep areas near exits and extinguishers clear.
- Review changed site conditions, onsite operations, and personnel availability in relation to emergency response procedures.
- Where appropriate and acceptable to the client, inform emergency room and ambulance and emergency response teams of anticipated types of site emergencies.
- Designate one vehicle as the emergency vehicle; place hospital directions and map inside; keep keys in ignition during field activities.
- Inventory and check site emergency equipment, supplies, and potable water.
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, and releases.
- Rehearse the emergency response plan before site activities begin, including driving route to hospital.
- Brief new workers on the emergency response plan.

The SHSS will evaluate emergency response actions and initiate appropriate follow-up actions.

10.2 Emergency Equipment and Supplies

The SHSS should mark the locations of emergency equipment on the site map and post the map. Emergency equipment is listed in Table 10-1.

TABLE 10-1
Emergency Equipment

Emergency Equipment and Supplies	Location
20 LB (or two 10-lb) fire extinguisher (A, B, and C classes)	Support Zone/Heavy Equipment
First aid kit	Support Zone/Field Vehicle
Eye Wash	Support & Decon Zone/Field Vehicle
Potable water	Support & Decon Zone/Field Vehicle
Bloodborne-pathogen kit	Support Zone/Field Vehicle
Additional equipment (specify):	

10.3 Incident Reporting, Investigation and Response

For any accident meeting the definition of **Recordable Occupational Injuries or Illnesses or Significant Accidents**, the Southern Division, NAVFAC Contracting Officer and Navy Technical Representative (NTR) shall be notified by the HSM or Program Manager soon as practical, **but not later than four hours after occurrence**. All other incidents must be reported to Southern Division, NAVFAC within 24 hours of incident occurrence.

Therefore in order for the incident to be assessed for reportability purposes it is imperative that according to CH2M HILL requirements, **all personal injuries, near-misses, or property damage incidents involving CH2M HILL or subcontractor project personnel be reported IMMEDIATELY to the HSM Rich Rathnow/ORO, Program Manager Scott Newman/ATL, or CH2M HILL Corporate HSM Angelo Liberatore/ATL at the numbers identified in the emergency contact attachment contained in this plan.**

The Site Manager or designee must **report the following incident information to the HSM immediately** after incident occurrence:

- Date and time of mishap
- Project name and project number
- Name and worker classification
- Extent of known injuries
- Level of medical attention
- Injury cause

A written incident investigation shall be performed and submitted to the HSM within 24 hours of incident occurrence by the completing the Incident Report, Near Loss Investigation and Root Cause Analysis provided in the HSP Attachments.

In fires, explosions, or chemical releases, actions to be taken include the following:

- Shut down CH2M HILL operations and evacuate the immediate work area.
- Notify appropriate response personnel.
- Account for personnel at the designated assembly area(s).
- Assess the need for site evacuation, and evacuate the site as warranted.

Instead of implementing a work-area evacuation, note that small fires or spills posing minimal safety or health hazards may be controlled.

10.4 Emergency Medical Treatment

The procedures listed below may also be applied to non-emergency incidents. CH2M HILL employee injuries and illnesses (including overexposure to contaminants) must be reported to their respective Human Resource contacts in Attachment 4. If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the CH2M HILL medical consultant, depending on whose employee is injured. During non-emergencies, follow these procedures as appropriate.

- Notify appropriate emergency response authorities listed in Section 10.8 (e.g., 911).
- The SHSS will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room.
- Prevent further injury.
- Initiate first aid and CPR where feasible.
- Get medical attention immediately.
- Perform decontamination where feasible; lifesaving and first aid or medical treatment take priority.
- Make certain that the injured person is accompanied to the emergency room.
- When contacting the medical consultant, give your name and telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken.
- Report incident as outlined in Section 10.7.

10.5 Evacuation

- Evacuation routes and assembly areas (and alternative routes and assembly areas) are specified on the site map.
- Evacuation route(s) and assembly area(s) will be designated by the SHSS before work begins.
- Personnel will assemble at the assembly area(s) upon hearing the emergency signal for evacuation.

- The SHSS and a “buddy” will remain on the site after the site has been evacuated (if safe) to assist local responders and advise them of the nature and location of the incident.
- The SHSS will account for all personnel in the onsite assembly area.
- A designated person will account for personnel at alternate assembly area(s).
- The SHSS will write up the incident as soon as possible after it occurs and submit a report to the Corporate Director of Health and Safety.

10.6 Evacuation Signals

Evacuation signals are listed in Table 10-2.

TABLE 10-2
Evacuation Signals

Signal	Meaning
Grasping throat with hand	Emergency-help me.
Thumbs up	OK; understood.
Grasping buddy's wrist	Leave area now.
Continuous sounding of horn	Emergency; leave site now.

10.7 Incident Notification and Reporting

- Upon any project incident (fire, spill, injury, near miss, death, etc.), immediately notify the PM and HSM. Call emergency beeper number if HSM is unavailable.
- For CH2M HILL work-related injuries or illnesses, contact the respective Human Resources contact listed in Attachment 4. For CH2M HILL incidents the HR administrator will complete an Incident Report Form (IRF). IRF must be completed within 24 hours of incident.
- For CH2M HILL subcontractor incidents, complete the Subcontractor Accident/Illness Report Form (Attachment 7) and submit to the HSM.
- Notify and submit reports to client as required in contract.

11.0 Behavior Based Loss Prevention System

A Behavior Based Loss Prevention System (BBLPS) is a system to prevent or reduce losses using behavior-based tools and proven management techniques to focus on behaviors or acts that could lead to losses.

The four basic Loss Prevention tools that will be used on CH2M HILL projects to implement the BBLPS include:

- Activity Hazard Analysis (AHA)
- Pre-Task Safety Plan (PTSP)
- Loss Prevention Observations (LPO)
- Loss and Near Loss Investigations (NLI)

The Site Supervisor serves as the Site Health and Safety Specialist (SHSS) and is responsible for implementing the BBLPS on the project site. When a separate individual is assigned as the SHSS, the SHSS is delegated authority from the Site Supervisor to implement the BBLPS on the project site, but the Site Supervisor remains accountable for its implementation. The Site Supervisor/Safety Coordinator shall only oversee the subcontractor's implementation of their AHAs and PTSPs processes on the project.

11.1 Activity Hazard Analysis

An Activity Hazard Analysis (AHA) defines the activity being performed, the hazards posed and control measures required to perform the work safely. Workers are briefed on the AHA before doing the work and their input is solicited prior, during and after the performance of work to further identify the hazards posed and control measures required.

Activity Hazard Analysis will be prepared before beginning each project activity posing H&S hazards to project personnel using the AHA form provided in Attachment 6. The AHA shall identify the work tasks required to perform each activity, along with potential H&S hazards and recommended control measures for each work task. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified.

An AHA shall be prepared for all field activities performed by CH2M HILL and subcontractor during the course of the project by the Site Supervisor/SHSS. The Project-Specific and General Hazards (Sections 3.1 and 3.2, respectively) of the HSP and applicable CH2M HILL Standards of Practice (SOPs) should be used as a basis for preparing CH2M HILL's AHAs.

CH2M HILL subcontractors are required to provide AHAs specific to their scope of work on the project for acceptance by CH2M HILL. Each subcontractor shall submit AHAs for their field activities, as defined in their work plan/scope of work, along with their project-specific HSP. Additions or changes in CH2M HILL or subcontractor field activities, equipment, tools or material to perform work or additional/different hazard encountered that require

additional/different hazard control measures requires either a new AHA to be prepared or an existing AHA to be revised.

11.2 Pre-Task Safety Plans

Daily safety meetings are held with all project personnel in attendance to review the hazards posed and required H&S procedures/AHAs, that apply for each day's project activities. The PTSPs serve the same purpose as these general assembly safety meetings, but the PTSPs are held between the crew supervisor and their work crews to focus on those hazards posed to individual work crews. At the start of each day's activities, the crew supervisor completes the PTSP, provided in Attachment 6, with input from the work crew, during their daily safety meeting. The day's tasks, personnel, tools and equipment that will be used to perform these tasks are listed, along with the hazards posed and required H&S procedures, as identified in the AHA. The use of PTSPs, better promotes worker participation in the hazard recognition and control process, while reinforcing the task-specific hazard and required H&S procedures with the crew each day. The use of PTSPs is a common safety practice in the construction industry.

11.3 Loss Prevention Observations

Loss Prevention Observations (LPOs) shall be conducted by Site Supervisor/SHSS for specific work tasks or operations comparing the actual work process against established safe work procedures identified in the project-specific HSP and AHAs. LPOs are a tool to be used by supervisors to provide positive reinforcement for work practices performed correctly, while also identifying and eliminating deviations from safe work procedures that could result in a loss. Site Supervisor/SHSS shall perform at least one LPO each week for a tasks/operations addressed in the project-specific HSP or AHA. The Site Supervisor/SHSS shall complete the LPO form in Attachment 6 for the task/operation being observed.

11.4 Loss/Near Loss Investigations

Loss/Near Loss Investigations shall be performed for the all CH2M HILL and subcontractor incidents involving:

- Person injuries/illnesses and near miss injuries
- Equipment/property damage
- Spills, leaks, regulatory violations
- Motor vehicle accidents

The cause of loss and near loss incidents are similar, so by identifying and correcting the causes of near loss causes, future loss incidents may be prevented. The following is the Loss/Near Loss Investigation Process:

- Gather all relevant facts, focusing on fact-finding, not fault-finding, while answering the who, what, when, where and how questions.
- Draw conclusions, pitting facts together into a probable scenario.

- Determine incident root cause(s), which are basic causes on why an unsafe act/condition existed.
- Develop and implement solutions, matching all identified root causes with solutions.
- Communicate incident as a Lesson Learned to all project personnel.
- Filed follow-up on implemented corrective active action to confirm solution is appropriate.

Site Supervisors/SHSS shall perform an incident investigation, as soon as practical after incident occurrence during the day of the incident, for all Loss and Near Loss Incidents that occur on the project. Loss and Near Loss incident investigations shall be performed using the following incident investigation forms provided in Attachment 6:

- Incident Report Form (IRF)
- Incident Investigation Form
- Root Cause Analysis Form

All Loss and Near Loss incident involving personal injury, property damage in excess of \$1,000 or near loss incidents that could have resulted in serious consequences shall be investigated by completing the incident investigation forms and submitting them to the PM and HSM within 24 hours of incident occurrence. A preliminary Incident Investigation and Root Cause Analysis shall be submitted to the Project Manager and HSM within 24 hours of incident occurs. The final Incident Investigation and Root Cause Analysis shall be submitted after completing a comprehensive investigation of the incident.

12.0 Approval

This site-specific Health and Safety Plan has been written for use by CH2M HILL only. CH2M HILL claims no responsibility for its use by others unless that use has been specified and defined in project or contract documents. The plan is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if those conditions change.

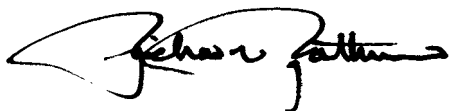
12.1 Original Plan

Written By: Rich Rathnow/ORO

Date: 8/9/02

Approved By: Rich Rathnow/ORO

Date: 8/9/02



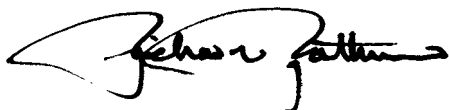
12.2 Revisions

Revisions Made By: Rich Rathnow

Date: 3-17-04

Revisions Approved By: Rich Rathnow

Date: 3-17-04



Attachment 1

Employee Signoff Form

EMPLOYEE SIGN-OFF FORM

- The CH2M HILL project employees and subcontractors listed below have been provided with a copy of this HSP, have read and understood it, and agree to abide by its provisions.

- | | |
|----------------------|------------------------|
| Project Name: | Project Number: |
|----------------------|------------------------|

Project Number:

[illegible]

Attachment 2

Project-Specific Chemical Product Hazard Communication Form

Project-Specific Chemical Product Hazard Communication Form

This form must be completed prior to performing activities that expose personnel to hazardous chemicals products. Upon completion of this form, the SHSS shall verify that training is provided on the hazards associated with these chemicals and the control measures to be used to prevent exposure to CH2M HILL and subcontractor personnel. Labeling and MSDS systems will also be explained.

Project Name:

Project Number:

**MSDSs will be maintained
at the following
location(s):**

Hazardous Chemical Products Inventory

[illegible]

Refer to SOP HS-05 *Hazard Communication* for more detailed information.

Attachment 3

Chemical Specific Training Form

CHEMICAL-SPECIFIC TRAINING FORM

Location:

Project # :

HCC:

Trainer:

TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:

The HCC shall use the product MSDS to provide the following information concerning each of the products listed above.

- ☐ Physical and health hazards
- ☐ Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)
- ☐ Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants shall have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and CH2M HILL's written hazard communication program shall be made available for employee review in the facility/project hazard communication file.

Attachment 4

Emergency Contacts

Emergency Contacts

24-hour CH2M HILL Emergency Beeper – 888/444-1226

Medical Emergency – 911

Facility Medical Response #:434-4811
Local Ambulance #:911

CH2M HILL- Medical Consultant

Jerry H. Berke, M.D., M.P.H.
Health Resources
600 West Cummings Park, Suite 3400
Woburn, MA 01801-6350
1-781-938-4653
1-800-350-4511

Fire/Spill Emergency -- 911

Facility Fire Response #:435-1703
Local Fire Dept #:435-1703 Escambia Fire Department

Local Occupational Physician

Security & Police – 911

Facility Security #:Base Security, 452-6604
Local Police #: 911

Navy RAC Program Manager

Name: Scott Newman/ATL
Phone: 770/604/9182

Utilities Emergency

Water: 452-5555
Gas: 452-5555
Electric:452-5555

Navy RAC Health and Safety Manager (HSM)

Name: Rich Rathnow/ORO
Phone: 865/483-9005 (Office); 865/607-7867 (Cell)
865/531-2933 (Home)

Site Health and Safety Specialist (SHSS)

Name: Scott Dunbar/ATL
Phone: (850)939-8300

CH2M HILL Regional Human Resources Department

Name: Nancy Orr/COR
Phone: 303/771-0900

Navy RAC Project Manager

Name: Amy Twitty/ NVR
Phone: (850)939-8300 ext. 17
cell(850)501-4417

CH2M HILL Corporate Human Resources Department

Name: John Monark/COR
Phone: 303/771-0900

Federal Express Dangerous Goods Shipping

Phone: 800/238-5355

Emergency Number for Shipping Dangerous Goods

Phone: 800/255-3924

CH2M HILL Worker's Compensation and Auto Claims

Sterling Administration Services
Phone: 800/420-8926 After hours: 800/497-4566

Report fatalities AND report vehicular accidents involving pedestrians, motorcycles, or more than two cars.

Contact the Project Manager. Generally, the Project Manager will contact relevant government agencies.

Facility Alarms:

Evacuation Assembly Area(s):

Facility/Site Evacuation Route(s):

Hospital Name/Address:

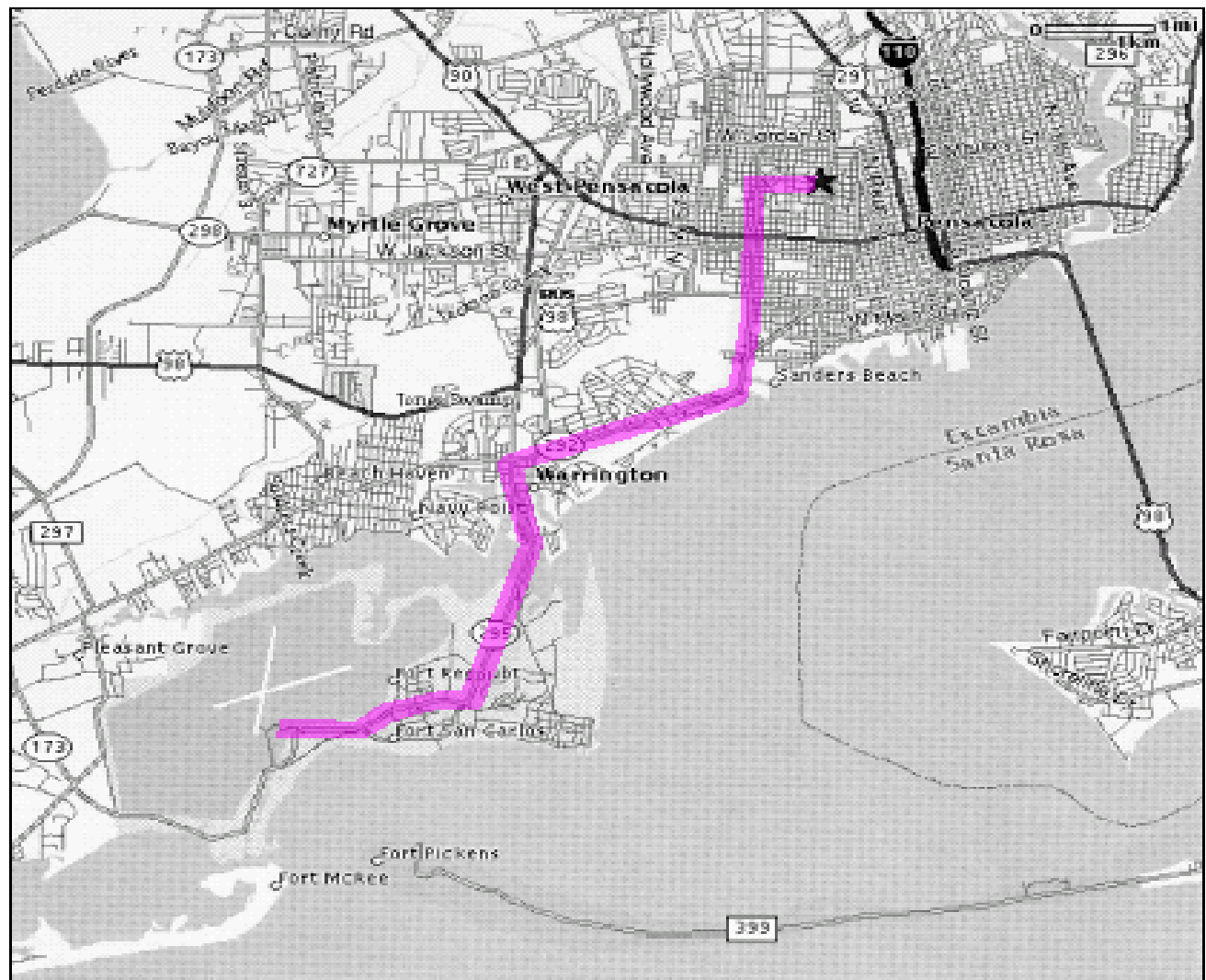
Baptist Hospital
1000 W. Moreno St.
Pensacola, FL 32501

Hospital Phone #:

(850) 434-4011

Directions to Hospital

From the site, turn right onto John H. Tower Road, then turn right onto Taylor Road. Follow ½ mile to Duncan Road (Route SR-295). Turn left and follow to Main Gate of NAS Pensacola. Proceed on SR-295 for 1.5 miles then turn right onto SR-292 and proceed for approximately 4 miles to West Moreno Street. Turn right and proceed for eight blocks to Baptist Medical Center. Refer to next page for map.



Attachment 5

Activity Hazard Analysis Form

Activity Hazard Form	
Activity: <hr/>	Date:
	Project:
Description of the work:	Site Supervisor: <hr/>
	Site Safety Officer:
	Review for latest use: Before the job is performed.

[illegible]

[illegible]

[illegible]

PRINT

SIGNATURE

Supervisor Name:

Date/Time: _____

Safety Officer Name:

Date/Time: _____

Employee Name(s):

Date/Time: _____

Date/Time: _____

Date/Time: _____

Date/Time: _____

Date/Time: _____

Date/Time: _____

Date/Time: _____

Date/Time: _____

Date/Time: _____

Date/Time:_____

Date/Time:_____

Attachment 6

Project Activity Self-Assessment Checklists/Permits

- Earthmoving Equipment
- Excavations

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees are potentially exposed to hazards associated with earthmoving equipment operations (complete Sections 1 and 3), and/or 2) CH2M HILL oversight of a earthmoving equipment subcontractor is required (complete entire checklist).

SSC/DSC may consult with earthmoving equipment subcontractors when completing this checklist, but shall not direct the means and methods of equipment operations nor direct the details of corrective actions. Earthmoving equipment subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the health and safety manager for review.

Project Name: _____ Project No.: _____
 Location: _____ PM: _____
 Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

- ☐ Evaluate CH2M HILL employee exposures to earthmoving equipment hazards
☐ Evaluate a CH2M HILL subcontractor's compliance with earthmoving equipment H&S requirements
 Subcontractors Name: _____

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the earthmoving equipment subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-27.

<u>SECTION 1</u>		<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
PERSONNEL SAFE WORK PRACTICES (3.1)					
1.	Only authorized personnel operating earthmoving equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Personnel maintaining safe distance from operating equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Personnel and equipment operator in close communication when personnel must be in proximity of operating equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Personnel approach operating equipment safely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Personnel wearing high-visibility and/or reflective vests when close to operating equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Personnel riding only in seats of equipment cab and using seat belts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	Personnel not positioned under hoisted loads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	Personnel not hoisted by equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	Personnel instructed not to approach equipment that has become electrically energized	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Personnel wearing appropriate PPE, per HSP/FSI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<u>SECTION 2</u>	Yes	No	N/A	N/O
GENERAL (3.2.1)					
11. Daily safety briefing/meeting conducted with crew		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Daily inspection of equipment and equipment accessories conducted before use		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. At least one fire extinguisher available at the equipment operating area		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EARTHMOVING EQUIPMENT COMPONENTS (3.2.2)					
14. Backup alarm or spotter used when backing equipment		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Operational horn provided on bi-directional equipment		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Seat belts are provided and used		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Rollover protective structures (ROPS) provided		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Braking system capable of stopping full payload		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Headlights and taillights operable when additional light required		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Brake lights in operable condition		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Cab glass provides no visible distortion to the operator		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Hauling equipment (dump trucks) provided with cab shield or canopy		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Dump truck beds provided with positive means of support during maintenance or inspection		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Dump truck operating levers provided with latch to prevent accidental dumping		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EARTHMOVING EQUIPMENT PLACEMENT (3.2.3)					
25. Location of underground utilities identified		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Safe clearance distance maintained while working under overhead powerlines		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Safe distance is maintained while traveling under powerlines		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Unattended equipment visibly marked at night		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Parking brake set when equipment parked and equipment chocked when parked on incline		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EARTHMOVING EQUIPMENT OPERATION (3.2.4)					
30. Equipment operated on safe roadways and grades		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Equipment operated at safe speed		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Equipment not operated during inclement weather, lightning storms		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Using equipment to lift loads, other than earth, done according to equipment manufacturer specifications		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Lifting and hauling capacities are not exceeded		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Equipment components lowered when not in use		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. All machine guards are in place		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Air monitoring conducted per HSP/FSI for hazardous atmospheres		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EARTHMOVING EQUIPMENT MAINTENANCE (3.2.5)					
38. Defective components repaired immediately		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Suspended equipment or equipment parts are supported prior to work under or between		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Lockout/tagout procedures used prior to maintenance		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Tires on split rims removed using safety tire rack or cage		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Good housekeeping maintained on and around equipment		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXCAVATING AT HAZARDOUS WASTE SITES (3.2.6)					
43. Waste disposed of according to HSP		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. Appropriate decontamination procedures being followed, per HSP		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION 3

Complete this section for all items checked “No” in Sections 1 or 2. Deficient items must be corrected in a timely manner.

[illegible]

Auditor: _____ Project Manager: _____

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees enter excavations (complete Sections 1 and 3), and/or 2) CH2M HILL oversight of an excavation subcontractor is required (complete entire checklist).

SC may consult with excavation subcontractors when completing this checklist, but shall not direct the means and methods of excavation operations nor direct the details of corrective actions. Excavation subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the health and safety manager for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

- ☐ Evaluate CH2M HILL employee exposures to excavation hazards
☐ Evaluate a CH2M HILL subcontractor's compliance with excavation HS&E requirements
Subcontractor Name: _____

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the excavation subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-32.

SECTION 1**Yes No N/A N/O****PERSONNEL SAFE WORK PRACTICES (4.1)**

- | | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Competent person has completed daily inspection and has authorized entry | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Personnel aware of entry requirements established by competent person | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Protective systems are free from damage and in stable condition | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Surface objects/structures secured from falling into excavation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Potential hazardous atmospheres have been tested and found to be at safe levels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Precautions have been taken to prevent cave-in from water accumulation in the excavation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Personnel wearing appropriate PPE, per HSP/FSI | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

	<u>SECTION 2</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
GENERAL (4.2.1)					
8. Daily safety briefing/meeting conducted with personnel		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Excavation and protective systems adequately inspected by competent person		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Defective protective systems or other unsafe conditions corrected before entry		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Guardrails provided on walkways over excavation 6' or deeper		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Barriers provided at excavations 6' or deeper when not readily visible		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Barriers or covers provided for wells, pits, shafts, or similar excavation 6' or deeper		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Excavating equipment operated safely (use earthmoving equipment checklist in HS-27)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PRIOR TO EXCAVATING (4.2.2)					
15. Location of underground utilities and installations identified		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Soils characterized prior to excavation where contamination may be present		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Excavation area checked for wetlands, endangered species, cultural/historic resources		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Stockpile construction and management plan		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. ECC consulted and plan established for wastewater disposal from excavation dewatering		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. SWPPP prepared for construction site 1-5 acres (depending on project location)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXCAVATING ACTIVITIES (4.2.3)					
21. Rocks, trees, and other unstable surface objects removed or supported		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Exposed underground utility lines supported		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Undermined surface structures supported or determined to be in safe condition		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Warning system used to remind equipment operators of excavation edge		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Stockpile, excavation covers, liners, silt fences in place, where required		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Fugitive dust suppressed		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXCAVATION ENTRY (4.2.4)					
27. Trenches > 4' deep provided with safe means of egress within 25'		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Structure ramps designed and approved by competent person		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Potential hazardous atmospheres tested prior to entry		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Rescue equipment provided where potential for hazardous atmospheres exists		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Ventilation used to control hazardous atmospheres and air tested frequently		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Appropriate respiratory protection used when ventilation does not control hazards		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Precautions taken to prevent cave-in from water accumulation in the excavation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Precautions taken to prevent surface water from entering excavation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Protection provided from falling/rolling material from excavation face		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Spoil piles, equipment, materials restrained or kept at least 2' from excavation edge		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXCAVATION PROTECTIVE SYSTEMS (4.2.5)					
37. Protective systems used for excavations 5' or deeper		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Protective systems for excavation deeper than 20' designed by registered PE		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. If soil unclassified, maximum allowable slope is 34 degrees		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Protective systems free from damage		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Protective system used according to manufacturer recommendations and not subjected to loads exceeding design limits		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Protective system components securely connected to prevent movement or failure		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. Cave-in protection provided while entering/exiting shielding systems		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. Personnel removed from shielding systems when installed, removed, or vertical movement		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PROTECTIVE SYSTEM REMOVAL (4.2.6)					
45. Protective system removal starts and progresses from excavation bottom		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. Protective systems removed slowly and cautiously		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. Temporary structure supports used if failure of remaining components observed		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. Backfilling taking place immediately after protective system removal		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

EXCAVATING AT HAZARDOUS WASTE SITES (4.2.7)

49. Waste disposed of according to HSP and RCRA regulations

☐ ☐ ☐ ☐

50. Appropriate decontamination procedures being followed, per HSP

☐ ☐ ☐ ☐

BACKFILL (4.2.8)

51. Backfill certified clean when required by client or local regulation

☐ ☐ ☐ ☐

FORMS/PERMITS (4.3)

52. Waste discharge/NPDES permit obtained for excavation de-watering, where required

☐ ☐ ☐ ☐

53. Dig permit obtained, where required by client/facility

☐ ☐ ☐ ☐

54. USDA soil permit obtained (for south/southeast and coastal states)

☐ ☐ ☐ ☐

[illegible]

Auditor: _____ Project Manager: _____

Attachment 7

Incident Reporting Forms

- Incident Report Form
- Near Loss Investigation Form
- Root Cause Analysis Form

Incident Report Form

Fax completed form to:

425.462.5957

CH2M HILL Seattle Office

Attention: Corporate HS&E Department

Type of Incident (Select at least one)

- | | | |
|---|--|--|
| <input type="checkbox"/> Injury/Illness | <input type="checkbox"/> Property Damage | <input type="checkbox"/> Spill/Release |
| <input type="checkbox"/> Environmental/Permit Issue | <input type="checkbox"/> Near Miss | <input type="checkbox"/> Other |

General Information (Complete for all incident types)

Preparer's Name: _____ Preparer's Employee Number: _____

Date of Report: _____ Date of Incident: _____ Time of Incident: _____ am/pm

Type of Activity (Provide activity being performed that resulted in the incident)

- | | | |
|--|--|--|
| <input type="checkbox"/> Asbestos Work | <input type="checkbox"/> Excavation Trench-Haz Waste | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> Confined Space Entry | <input type="checkbox"/> Excavation Trench-Non Haz | |
| <input type="checkbox"/> Construction Mgmt- Haz Waste | <input type="checkbox"/> Facility Walk Through | <input type="checkbox"/> Process Safety Management |
| <input type="checkbox"/> Construction Mgmt - Non-Haz Waste | <input type="checkbox"/> General Office Work | <input type="checkbox"/> Tunneling |
| <input type="checkbox"/> Demolition | <input type="checkbox"/> Keyboard Work | <input type="checkbox"/> Welding |
| <input type="checkbox"/> Drilling-Haz Waste | <input type="checkbox"/> Laboratory | <input type="checkbox"/> Wetlands Survey |
| <input type="checkbox"/> Drilling-Non Haz Waste | <input type="checkbox"/> Lead Abatement | <input type="checkbox"/> Working from Heights |
| <input type="checkbox"/> Drum Handling | <input type="checkbox"/> Motor Vehicle Operation | <input type="checkbox"/> Working in Roadways |
| <input type="checkbox"/> Electrical Work | <input type="checkbox"/> Moving Heavy Object | <input type="checkbox"/> WWTP Operation |

Location of Incident (Select one)

- ☐ Company Premises (CH2M HILL Office: _____)
- ☐ Field (Project #: _____ Project/Site Name: _____ Client: _____)
- ☐ In Transit (Traveling from: _____ Traveling to: _____)
- ☐ At Home

Geographic Location of Incident (Select region where the incident occurred)

- | | | |
|------------------------------------|------------------------------------|---|
| <input type="checkbox"/> Northeast | <input type="checkbox"/> Southwest | <input type="checkbox"/> Asia Pacific |
| <input type="checkbox"/> Southeast | <input type="checkbox"/> Corporate | <input type="checkbox"/> Europe Middle East |
| <input type="checkbox"/> Northwest | <input type="checkbox"/> Canadian | <input type="checkbox"/> Latin America |

If a CH2M HILL subcontractor was involved in the incident, provide their company name and phone number: _____

Describe the Incident (Provide a brief description of the incident): _____

Injured Employee Data (Complete for Injury/Illness incidents only)**If CH2M HILL employee injured**

Employee Name: _____ Employee Number: _____

If CH2M HILL Subcontractor employee injured

Employee Name: _____ Company: _____

Injury Type

- ☐ Allergic Reaction
- ☐ Amputation
- ☐ Asphyxia
- ☐ Bruise/Contusion/Abrasion
- ☐ Burn (Chemical)
- ☐ Burn/Scald (Heat)
- ☐ Cancer
- ☐ Carpal Tunnel
- ☐ Concussion
- ☐ Cut/Laceration
- ☐ Dermatitis
- ☐ Dislocation

- ☐ Electric Shock
- ☐ Foreign Body in eye
- ☐ Fracture
- ☐ Freezing/Frost Bite
- ☐ Headache
- ☐ Hearing Loss
- ☐ Heat Exhaustion
- ☐ Hernia
- ☐ Infection
- ☐ Irritation to eye
- ☐ Ligament Damage

☐ Multiple (Specify) _____

- ☐ Muscle Spasms
- ☐ Other (Specify) _____

- ☐ Poisoning (Systemic)
- ☐ Puncture
- ☐ Radiation Effects
- ☐ Strain/Sprain
- ☐ Tendonitis
- ☐ Wrist Pain

Part of Body Injured

- ☐ Abdomen
- ☐ Ankle(s)
- ☐ Arms (Multiple)
- ☐ Back
- ☐ Blood
- ☐ Body System
- ☐ Buttocks
- ☐ Chest/Ribs
- ☐ Ear(s)
- ☐ Elbow(s)
- ☐ Eye(s)
- ☐ Face
- ☐ Finger(s)
- ☐ Foot/Feet

- ☐ Hand(s)
- ☐ Head
- ☐ Hip(s)
- ☐ Kidney
- ☐ Knee(s)
- ☐ Leg(s)
- ☐ Liver
- ☐ Lower (arms)
- ☐ Lower (legs)
- ☐ Lung
- ☐ Mind

☐ Multiple (Specify) _____

- ☐ Neck
- ☐ Nervous System
- ☐ Nose
- ☐ Other (Specify) _____

- ☐ Reproductive System
- ☐ Shoulder(s)
- ☐ Throat
- ☐ Toe(s)
- ☐ Upper Arm(s)
- ☐ Upper Leg(s)
- ☐ Wrist(s)

Nature of Injury

- ☐ Absorption
- ☐ Bite/Sting/Scratch
- ☐ Cardio-Vascular/Respiratory System Failure
- ☐ Caught In or Between
- ☐ Fall (From Elevation)
- ☐ Fall (Same Level)
- ☐ Ingestion

- ☐ Inhalation
- ☐ Lifting
- ☐ Mental Stress
- ☐ Motor Vehicle Accident
- ☐ Multiple (Specify) _____

☐ Other (Specify) _____

- ☐ Overexertion
- ☐ Repeated Motion/Pressure
- ☐ Rubbed/Abraded
- ☐ Shock
- ☐ Struck Against
- ☐ Struck By
- ☐ Work Place Violence

Initial Diagnosis/Treatment Date: _____

Type of Treatment

- ☐ Admission to hospital/medical facility
- ☐ Application of bandages
- ☐ Cold/Heat Compression/Multiple Treatment
- ☐ Cold/Heat Compression/One Treatment
- ☐ First Degree Burn Treatment
- ☐ Heat Therapy/Multiple treatment
- ☐ Multiple (Specify) _____

- ☐ Heat Therapy/One Treatment
- ☐ Non-Prescriptive medicine
- ☐ None
- ☐ Observation
- ☐ Other (Specify) _____

☐ Prescription- Multiple dose _____

- ☐ Prescription- Single dose
- ☐ Removal of foreign bodies
- ☐ Skin Removal
- ☐ Soaking therapy- Multiple Treatment
- ☐ Soaking Therapy- One Treatment
- ☐ Stitches/Sutures
- ☐ Tetanus
- ☐ Treatment for infection
- ☐ Treatment of 2nd /3rd degree burns
- ☐ Use of Antiseptics - multiple treatment
- ☐ Use of Antiseptics - single treatment
- ☐ Whirlpool bath therapy/multiple treatment
- ☐ Whirlpool therapy/single treatment
- ☐ X-rays negative
- ☐ X-rays positive/treatment of fracture

Number of days doctor required employee to be off work: _____
Number of days doctor restricted employee's work activity: _____
Equipment Malfunction : Yes ☐ No ☐ Activity was a Routine Task: Yes ☐ No ☐
Describe how you may have prevented this injury: _____

Physician Information

Name: _____
Address: _____
City: _____
Zip Code: _____
Phone: _____

Hospital Information

Name: _____
Address: _____
City: _____
Zip Code: _____
Phone: _____

Property Damage (Complete for Property Damage incidents only)

Property Damaged: _____ Property Owner: _____
Damage Description: _____
Estimated Amount: \$ _____

Spill or Release (Complete for Spill/Release incidents only)

Substance (attach MSDS): _____ Estimated Quantity: _____
Facility Name, Address, Phone No.: _____
Did the spill/release move off the property where work was performed?: _____
Spill/Release From: _____ Spill/Release To: _____

Environmental/Permit Issue (Complete for Environmental/Permit Issue incidents only)

Describe Environmental or Permit Issue: _____
Permit Type: _____
Permitted Level or Criteria (e.g., discharge limit): _____
Permit Name and Number (e.g., NPDES No. ST1234): _____
Substance and Estimated Quantity: _____
Duration of Permit Exceedence: _____

Verbal Notification (Complete for all incident types)(Provide names, dates and times)

CH2M HILL Personnel Notified: _____
Client Notified: _____

Witnesses (Complete for all incident types)

Witness Information (First Witness)

Name: _____
Employee Number (CH2M HILL): _____
Address: _____
City: _____
Zip Code: _____
Phone: _____

Witness Information (Second Witness)

Name: _____
Employee Number (CH2M HILL): _____
Address: _____
City: _____
Zip Code: _____
Phone : _____

Additional Comments:

NEAR LOSS INVESTIGATION FORM

Employer Information

Company Name: _____

Project Name: _____ Project Number: _____

Project Location: _____

CHIL Project? Yes ☐ No ☐

Task Location: _____

Job Assignment: _____ Business Group: _____

Preparer's Name: _____ Preparer's Employee Number: _____

Near Loss Incident Specific Information

Date of Incident: _____ Time of Incident: _____ a.m./p.m.

Location of incident:

☐ Company premises ☐ Field ☐ In Transit ☐ Other: _____

Address where the incident occurred: _____

Equipment Malfunction : Yes ☐ No ☐

Activity was a Routine Task: Yes ☐ No ☐

Describe any property damage: _____

Specific activity the employee was engaged in when the incident occurred:

All equipment, materials, or chemicals the employee was using when the incident occurred:

Describe the specific incident and how it occurred:

Describe how this incident may have been prevented:

Contributing Factors (Describe in detail why incident occurred):

Date employer notified of incident: _____ To whom reported: _____

NEAR LOSS INVESTIGATION FORM

Witness Information (First Witness)

Name: _____
Employee Number (for CH2M HILL employees): _____
Address: _____
City: _____
Zip Code : _____
Phone: _____

Witness Information (Second Witness)

Name: _____
Employee Number (for CH2M HILL employees): _____
Address: _____
City: _____
Zip Code: _____
Phone : _____

Additional information or comments: _____

Root Cause Analysis Form

Root Cause Analysis (RCA)

- | | |
|--|--|
| 1. Lack of skill or knowledge | 5. Correct way takes more time and/or requires more effort |
| 2. Lack of or inadequate operational procedures or work standards | 6. Short cutting standard procedures is positively reinforced or tolerated |
| 3. Inadequate communication of expectations regarding procedures or work standards | 7. Person thinks there is no personal benefit to always doing the job according to standards |
| 4. Inadequate tools or equipment | 8. Uncontrollable |

RCA #	Solution(s): How to Prevent Loss From Occurring	RC ¹	CF ²	Corrective Action Lead	Due Date	Completion Date	Date Verified

¹ RC = Root Cause; ² CF = Contributing Factors (check which applies)

Investigation Team Members

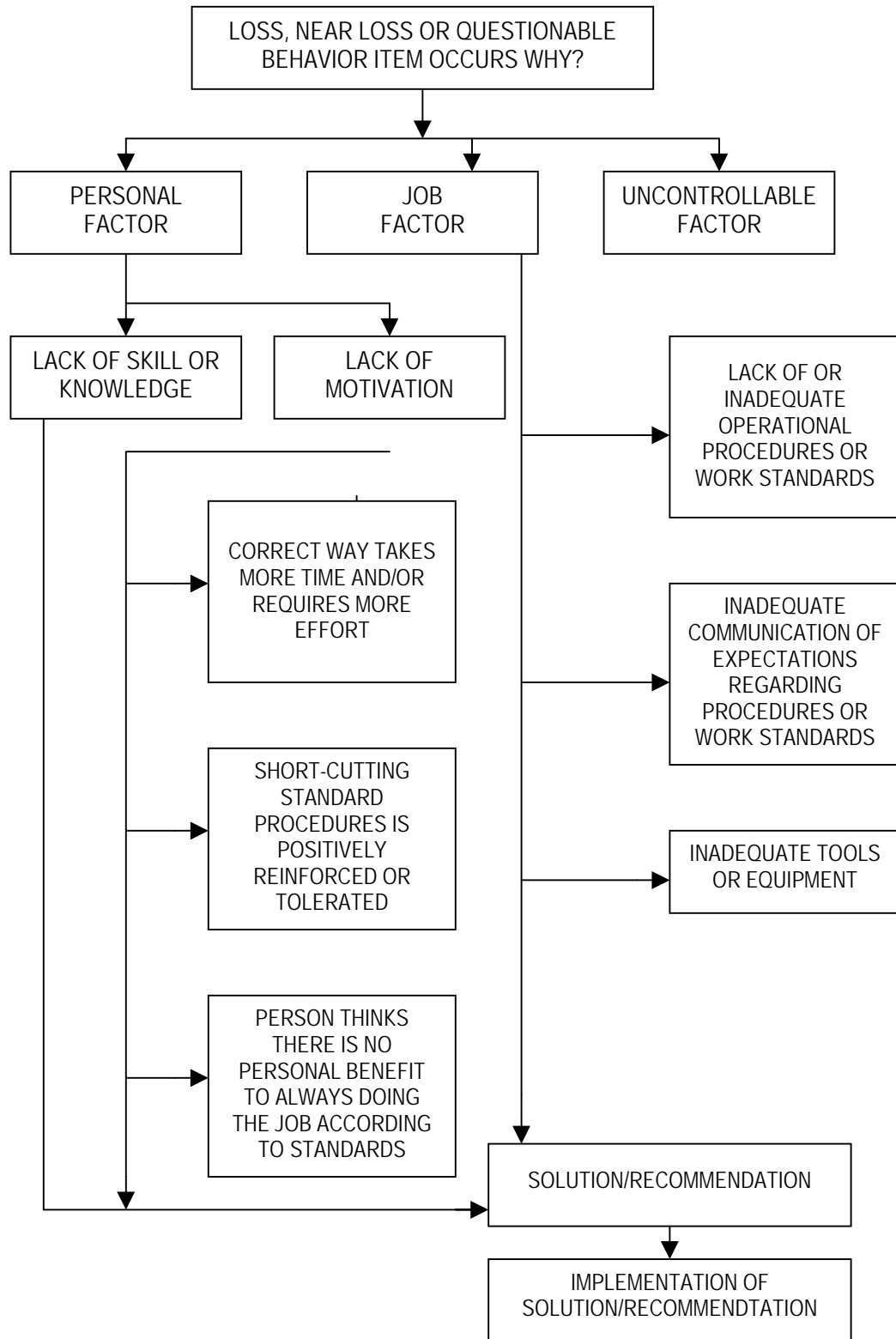
Name	Job Title	Date

Results of Solution Verification and Validation

Reviewed By

Name	Job Title	Date

Root Cause Analysis Flow Chart



Determination of Root Cause(s)

For minor losses or near losses the information may be gathered by the supervisor or other personnel immediately following the loss. Based on the complexity of the situation, this information may be all that is necessary to enable the investigation team to analyze the loss, to determine the root cause, and to develop recommendations. More complex situations may require the investigation team to revisit the loss site or re-interview key witnesses to obtain answers to questions that may arise during the investigation process.

Photographs or videotapes of the scene and damaged equipment should be taken from all sides and from various distances. This point is especially important when the investigation team will not be able to review the loss scene.

The investigation team must use the Root Cause Analysis Flow Chart to assist in identifying the root cause(s) of a loss. Any loss may have one or more “root causes” and “contributing factors”. The “root cause” is the primary or immediate cause of the incident, while a “contributing factor” is a condition or event that contributes to the incident happening, but is not the primary cause of the incident. Root causes and contributing factors that relate to the *person* involved in the loss, his or her peers, or the supervisor should be referred to as “personal factors”. Causes that pertain to the *system* within which the loss or injury occurred should be referred to as “job factors”.

Personal Factors

- Lack of skill or knowledge
- Correct way takes more time and/or requires more effort
- Short-cutting standard procedures is positively reinforced or tolerated
- Person thinks that there is no personal benefit to always doing the job according to standards

Job Factors

- Lack of or inadequate operational procedures or work standards.
- Inadequate communication of expectations regarding procedures or standards
- Inadequate tools or equipment

The root cause(s) could be any one or a combination of these seven possibilities or some other “uncontrollable factor”. In the vast majority of losses, the root cause is very much related to one or more of these seven factors. Uncontrollable factors should be used rarely and only after a thorough review eliminates “all” seven other factors.

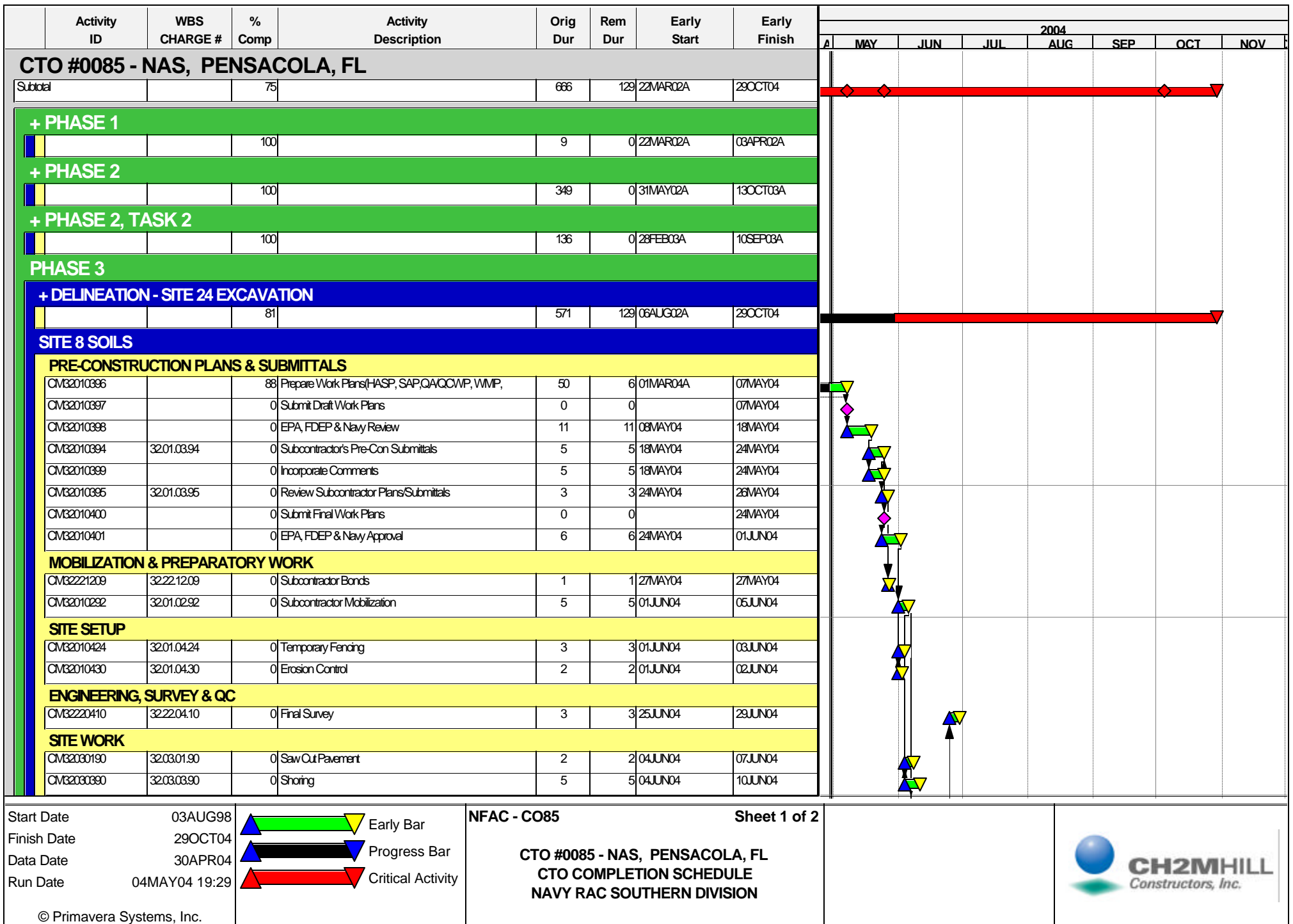
Attachment 8

Material Safety Data Sheets

(Available onsite)

Appendix C

Project Schedule

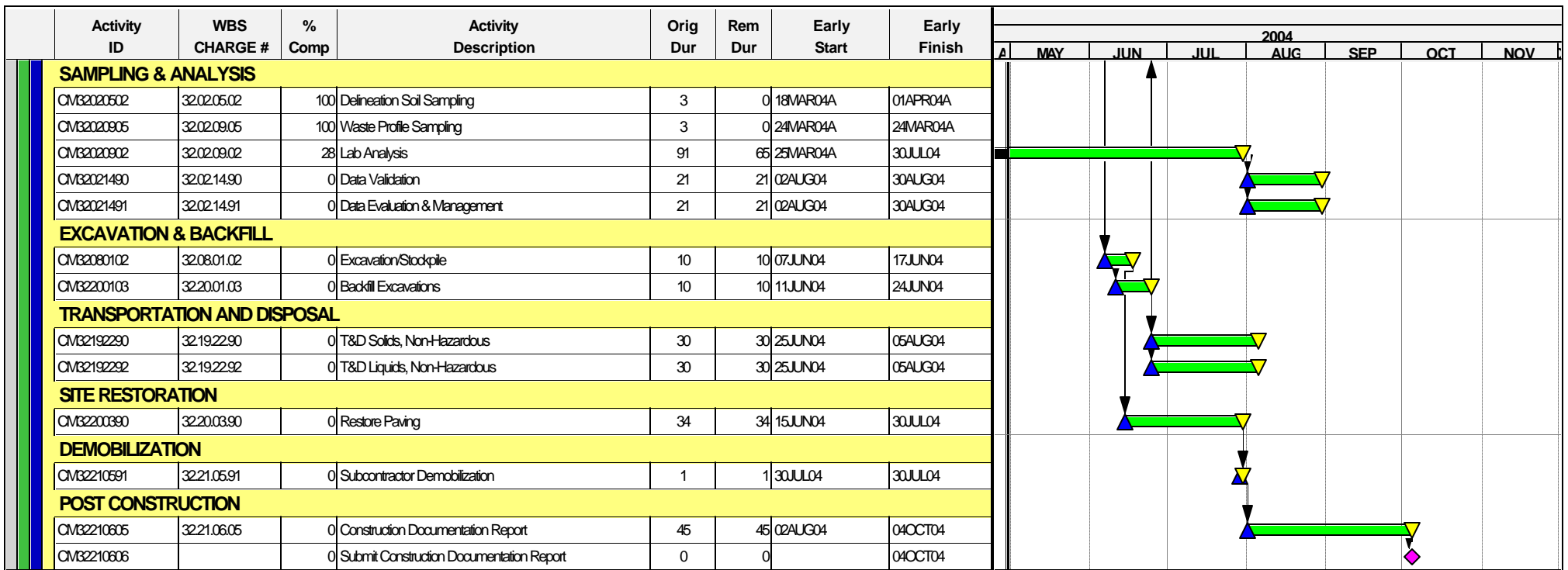


Start Date 03AUG98
 Finish Date 29OCT04
 Data Date 30APR04
 Run Date 04MAY04 19:29

Early Bar
 Progress Bar
 Critical Activity

NFAC - C085
 Sheet 1 of 2
 CTO #0085 - NAS, PENSACOLA, FL
 CTO COMPLETION SCHEDULE
 NAVY RAC SOUTHERN DIVISION





Appendix D

Submittal Register

Submittal Register

[illegible]

Appendix E

Quality Control Manager Appointment Letter

**CH2M HILL**

115 Perimeter Center Place, N.E.

Suite 700

Atlanta, GA

30346-1278

Tel 770.604.9095**Fax 770.604.9282**

March 31, 2003

Mr. Ryan Bitely
CH2M HILL
1766 Sea Lark Lane
Navarre, FL 32566-7472

RE: Contract No. N62467-98-D-0995
Contract Task Order No. 0085
Naval Air Station (NAS) Pensacola – Pensacola, Florida
Project Quality Control Manager Letter of Appointment

Dear Mr. Bitely:

Herein describes the responsibilities and authority delegated to you in your capacity as the Project QC Manager at the NAS Pensacola site, Contract Task Order (CTO) 0085 under the Navy RAC Contract No. N62467-98-D-0995.

In this position, you assist and represent the Program QC Manager in continued implementation and enforcement of the Project QC Plans. Your primary role is to ensure all requirements of the contract are met. Consistent with this responsibility, you will: (i) implement the QC program as described in the Navy RAC contract; (ii) manage the site-specific QC requirements in accordance with the Project QC Plans; (iii) attend the coordination and mutual understanding meeting; (iv) conduct QC meetings; (v) oversee implementation of the three phases of control; (vi) perform submittal review and approval; (vii) ensure testing is performed; (viii) prepare QC certifications and documentation required in the Navy RAC Contract; and, (ix) furnish a Completion Certificate to the Contracting Officer or designated representative, upon completion of work under a contract task order, attesting that "the work has been completed, inspected, and tested, and is in compliance with the contract."

Your responsibilities further include identifying and reporting quality problems, rejecting nonconforming materials, initiating corrective actions, and recommending solutions for nonconforming activities.

You have the authority to control or stop further processing, delivery, or installation activities until satisfactory disposition and implementation of corrective actions are achieved. You have the authority to direct the correction of non-conforming work. All work requiring corrective action will be documented on daily reports, and, in the event non-conforming work is not immediately corrected you are required to submit a non-conformance report to the PM and

copy the Program QC Manager. A status log will be kept of all non-conforming work. You shall immediately notify the Program QC Manager in the event of any stop work order.

It is imperative that you comply with all terms of the basic contract. In particular, Section C, Paragraph 6.5.2, which states:

"No work or testing may be performed unless the QC Program Manager or Project QC Manager is on the work site."

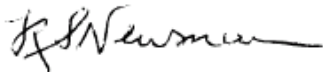
In the event that you are not able to be at the work site when work or testing is to be performed, it is your responsibility to inform the Program QC Manager and Project Manager, in advance, so that other arrangements can be made.

Further, if you are requested to perform the duties of the Site Supervisor, it is your responsibility to inform the Program QC Manager so that approval can be obtained in advance from the Contracting Officer or designated representative, in accordance with Section C Paragraph.6.2.1of the contract.

You are a key member of the Project Manager's team. You ensure that work meets the specific requirements and intent of the work plan, the Navy's scope of work and the basic contract. Should you have any questions regarding this role, you should immediately contact the Program QC Manager, Theresa Rojas. Your day-to-day activities on the site should be coordinated with all site personnel and the Project Manager. In event of any deficient items, the Superintendent and Project Manager should be advised immediately so they have opportunity to remedy the situation.

Sincerely,

CH2M HILL Constructors, Inc.



R. Scott Newman
Program Manager

cc: Amy Twitty/ATL
Scott Smith/ATL
Theresa Rojas/ATL
CCI Project File No. 171578

Appendix F

Testing Plan and Log

Testing Plan and Log

CH2M HILL, Inc.

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